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MEDICINE AND THE COLLATERAL SCIENCES.

Vol. XVII.] JANUARY, 1873. [No. 1.

Original Communications.

Art. I.—*The New York School of Surgery.*[1] By Stephen Smith, M. D., Surgeon to Bellevue Hospital.

One hundred years ago, this 2d day of November, there was witnessed in this city of New York a novel and interesting ceremony. In the forenoon a large concourse of citizens assembled at the Vestry Rooms, where a procession was formed, which proceeded to King's College Hall. Conspicuous in this assemblage was his Excellency the Governor, Sir Henry Moore, Bart., the judges of the Supreme Court in their robes, and the gentlemen of the law in their gowns. Arrived at the hall, this "learned and splendid audience" was entertained with "a very elegant and learned discourse by Dr. Middleton, Professor of the Theory of Physic, on 'the Antiquity, Progress, and Usefulness of the Science.'"[2]

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[1] The Annual Address of the New York Academy of Medicine, 1867.

[2] The official announcement of the organization of the college is as follows:

King's College, New York, *September* 17, 1767.

As the Establishment of a School for the regular instruction of Gentlemen in the different Branches of Medicine, must not only promote the Honour and Utility of that important and necessary Science, but likewise conduce to the general Advancement of *Learning;* the GOVERN-

Discourses introductory to the several branches about to be taught were delivered during the following week, the con-

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ORS of this College, in Consequence of the Powers vested in them by their *Charter;* and being desirous of rendering the Institution over which they preside, as publickly and extensively useful as possible; have appointed the following Professors.

SAMUEL CLOSSEY, M. D., *Professor* of Anatomy.
PETER MIDDLETON, M. D., *Professor* of the Theory of Physic.
JOHN JONES, M. D., *Professor* of Surgery.
JOHN SMITH, M. D., *Professor* of Chymestry and Mat. Med.
JOHN TENNENT, M. D., *Professor* of Midwifery.
SAMUEL BARD, M. D., *Professor* of the Practice of Physic.

The above Gentlemen will begin their *Lectures* the first Monday in *November* next, and continue them regularly 'til the Completion of the several Courses, which it is supposed, will be some time in *May;* and *Degrees* in *Physic* will be conferred upon the following Terms:

1. Each Student shall be matriculated as in the *Universities* of England.

2. Such Students as have not taken a Degree in *Arts* shall satisfy the Examiners, before their Admission to a *Degree* in Physic, that they have a competent Knowledge of, at least, the *Latin* Language, and of the necessary Branches of *Natural Philosophy.*

3. No Student shall be admitted to his Examination for a *Bachelor's* Degree, in less than three Years after his Matriculation; and having attended at least, one complete Course of Lectures under each Professor: Unless he can produce proper Certificates of his having served an Apprenticeship of *three Years,* to some reputable Practitioner; in which Case he may be admitted to his Examination in *two years* from his Matriculation.

4. In one Year after having obtained a Bachelor's Degree, a Student may be admitted to his Examination for the *Degree* of Doctor; provided he shall previously have attended two Courses of Lectures under each Professor, be of Twenty-Two Years of Age, and have published, and publickly defended, a Treatise upon some *Medical Subject.*

5. The mode of Examination, both public and private, shall be conformable to the Practice of the most *celebrated Universities* of Europe.

6. Students from any reputable University, may be admitted *ad eundem* producing proper Certificates, and *Graduates,* will be entitled to the same Privilege, on producing the like Certificate, and satisfying the *Professors* of their Medical Abilities.—*The N. Y. Journal; or the General Advertiser, September* 24, 1767.

The newspapers thus notice the event: "At the opening of the medical school in King's College in this city on Monday forenoon last, with the Governor, president, tutors, and professors of the college, assembled at the Vestry Room in this city, from which being honored with the company of his Excellency the Governor, the judges of the Supreme Court in their cluding address being on the evening of the 9th of November, by Dr. John Jones, Professor of Surgery.

Thus was inaugurated the Medical Department of King's College, the first medical school established in this State, and the second in the United States.[1] The occasion seems to have been of great interest to the audience, composed of the leading and most influential citizens, and to have given universal satisfaction, for they considered "the performance as the beginning of an institute so replete with advantages to mankind in general, and to the inhabitants of this province in particular."

Dr. Middleton closed his learned discourse with the following eloquent peroration: "I shall now conclude with my warmest and most sincere wishes for the lasting prosperity of this college, for the happiness of all who are any ways interested in its welfare and reputation, whether distinguished as governors, teachers, pupils, or friends, and more particularly for the success of this present institution, that it may prove an ornament to this city, an honor to the country, and the nursery of men of genius, whose labors ever useful shall be transmitted with undiminished praise to the latest times, in the records of literature and annals of physic, whose pride it shall be to have been formed to science within these walls,

---

robes, and the gentlemen of the law in their gowns, they walked in procession to the college hall, where they were entertained with a very elegant and learned discourse by Dr. Middleton, Professor of the Theory of Physic, on 'The Antiquity, Progress, and Usefulness of the Science.' The satisfaction of the learned and splendid audience on this occasion was universal, and was especially so when they considered the performance as the beginning of an institution so replete with advantages to mankind in general, and to the inhabitants of this province in particular."

[1] The Medical Department of King's College, New York, was formally opened on the 2d of November, 1767; in 1769 the degree of Bachelor in Medicine was conferred upon Samuel Kissam and Robert Tucker; in 1770 the degree of Doctor in Medicine was conferred on Robert Tucker; and in May, 1771, upon Samuel Kissam.

The Medical School of the College of Philadelphia was organized in 1765; on the 21st of June, 1768, it held its first commencement, and conferred the degree of Bachelor of Medicine; in June, 1771, the degree of Doctor in Medicine was first conferred by this college.

and whose names shall receive additional lustre from the wide-extended fame and merited renown of this university."

We are now passing the centennial anniversary of the first session, 1767–'68, of the medical school so auspiciously inaugurated, and the event is well worthy of commemoration. The medical actors in this now historic scene, Middleton, Clossey, Bard, Tennent, Smith, Jones,[1] the learned and splendid audience, and even the university which they founded, have all passed away. Standing upon the threshold of another century, we are in a position to estimate the success of this novel enterprise, and the value of the labors of its projectors.

As the discourse introductory to the era of medical teaching in New York was devoted to an historical inquiry into the past and present state of medicine, so may we appropriately observe the centennial anniversary of that occasion by reviewing the progress of medicine in this city during the past century. It will be convenient, however, to limit this inquiry to a single department, and that of surgery is selected, as the anniversary of the first lecture on that branch is but just passed.

The history of surgery in New York comprehends:

I. Surgical Instruction.
II. Surgical Improvements.
III. Surgical Literature.

Professorships of Surgery, Professors, and Teachers.—The first professorship of surgery was established in King's College, 1767, and the first systematic course of lectures was given during the session 1767–'68. This course was annually repeated until 1775, when the war of the Revolution caused the suspension of the college.

During this period the Professorship of Surgery was filled by Dr. John Jones,[2] who gave the introductory lecture to the first course on the evening of the 9th of November, 1767. This course of lectures was annually repeated, with the exception perhaps of the year 1770, when Dr. Jones was abroad, until the close of the school in 1775.

---

[1] The Faculty consisted of: Dr. Peter Middleton, Professor of Physiology and Pathology; Dr. Samuel Bard, Professor of the Theory and Practice of Physic; Dr. Samuel Clossey, Professor of Anatomy; Dr. James Smith, Professor of Chemistry; Dr. John Jones, Professor of Surgery; Dr. John V. B. Tennent, Professor of Midwifery.

[2] Dr. John Jones was of Welsh descent. His grandfather, Dr. Edward Jones, was a native of Wales, and came to this country in the famous ship Welcome, with William Penn and his colony. He married a daughter of

Dr. Jones was eminently qualified to be the founder of surgical instruction in New York. The qualities of his mind were of a high order; he had great penetration, an intuitive recognition of truth and error, and natural sagacity. He travelled extensively for those days, and was evidently a most shrewd observer of men and things. The enlightened zeal which he manifested in the pursuit of professional knowledge attracted the attention of all with whom he came in contact, and he made warm friends of Pott, Le Dran, Petit, and others. Although he devoted himself especially to the study of anatomy and surgery, yet his general studies took a wide range, and his observations extended to the minutest branches of general science. His later writings show that, while attentively engaged in pursuing the practice of the great hospitals of Europe, he studied hospital hygiene and hospital architecture even more thoroughly and more correctly than those who have since made these subjects an especial study.

Dr. Thomas Wynne, Speaker of the Assembly of Penn's colony. His son, Dr. Evan Jones, settled at Jamaica, Long Island, New York, where Dr. John Jones was born in 1729. He was educated at a private school in New York, and at the age of eighteen began the study of medicine with Dr. Thomas Cadwalader, of Philadelphia. On completing his studies, he visited London and attended the lectures of Dr. William Hunter, and the practice of Pott in St. Bartholemew's Hospital. In 1757 he visited France, and obtained the degree of Doctor in Medicine from the University of Rheims. In Paris he attended the anatomical lectures of Petit, and in the Hôtel Dieu received instruction from Le Cat and Le Dran. He also visited the famous University of Leyden, and finally the school of Edinburgh. He located in New York in 1753–'54. During the Colonial War he volunteered as surgeon, and on his return resumed practice in New York. On the breaking out of the Revolutionary War, he entered the army as surgeon, but soon retired on account of ill-health. Toward the close of the war, about 1780, he located at Philadelphia, where he died June 23, 1791, at the age of sixty-three.

The genealogy above given is from Mease, and has been generally accepted. Recent investigations, however, have led a competent student to doubt the connection of Dr. Jones with the line of Edward Jones.

Dr. Jones settled in New York about 1753–'54, when scarcely twenty-five years of age, and soon acquired a large practice, especially in surgery. He seems to have been the first to perform lithotomy in this city, and subsequently he gained great and deserved reputation for his uniform success.[1] During the Colonial War between the French and English, 1755, Dr. Jones volunteered as surgeon, and served to the close of the campaign. He took the highest rank in the medical staff, and, on the defeat of the French general, Dieskau,[2] he had the charge of this officer, who was severely wounded. His wounds consisted of a gunshot-fracture of the thigh and knee, and a wound of the pelvis, involving the bladder, through which the urine escaped. The general was removed to New York, where Dr. Jones continued his attendance until his patient left for Europe. At the commencement of the Revolutionary War, he volunteered in the Continental army as surgeon. From this position, however, he was compelled to retire, on account of ill-health, and he took up his residence in Philadelphia. In later life he was the professional attendant of Washington and Franklin. When Washington was suffering from a carbuncle during his first presidency, and while resident in New York, Dr. Jones was sent for at Philadelphia to attend him; by his advice the carbuncle was opened, and

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[1] From the *New York Mercury* of May 17, 1756, we learn that Dr. Bard performed lithotomy successfully on the 12th of May, on a woman upward of sixty years of age, the stone measuring nearly four inches in circumference. Dr. Jones's operations are noticed later; one occurred July 14, 1763, the patient being a woman, and the stone seven and a half ounces.

[2] There is much surgical interest attached to the wounds of Baron de Dieskau. He was wounded and taken prisoner on the 8th of September, 1755, in an engagement with the English under Sir William Johnson, near Fort Lydius, now Fort Edward, Washington County, New York. In his report of the battle, dated at the English camp, September 14th, he says of his wounds: "I was knocked down by three shots, none of which were mortal, but I received a fourth that passed from one hip to the other, perforating the bladder." On the following day he wrote: "I have received, for my share, four gunshot-wounds, one of which is mortal." Another account is as follows: "Baron Dieskau was wounded, first in the leg, and he shortly after received a ball that went through his right knee and entered the flesh of his left hip." The second officer in command, Montreuil, who was present, wrote: "M. de Dieskau received one (ball) in the leg. He insisted on staying on the same spot, though the place was not tenable. I had no sooner washed his wound with brandy, than he received another ball in the right knee and left hip. He sat down at the foot of a tree and showed me where the musket-ball passed; that wound appeared to me very serious." Another writer (Lotbinière) gives the following account of the wounds: "Being quite close to the enemy, he was struck by a ball in the bone of the leg, which prevented him going any farther, and, as he persisted in remaining on the same spot, he received a second ball in the knees, which broke them both." He was sent to Albany on a litter on the 16th of September, and on the 8th of October he was reported to be better. At Orange, he wrote, on the 12th of October, 1755: "Since my arrival here I have been very ill, and rarely free from suffering very acute pain; so that it appears that I am floating between life and death. All my wounds are healing, with the exception of those traversing both hips and passing through the bladder. The urine, which constantly drops from one of these holes, and sometimes both at once, prevents their healing, and ren-

ders my condition very uncertain; it thus appears that I have survived, up to this time, only by the strength of my constitution, and the great attention which has been paid me." On the following day he was removed to New York, from which he wrote, January 12, 1756: "Finding myself entirely out of danger, and my wounds improving rapidly." Again, on the 22d of June, 1756, he wrote from New York: "My wounds are beginning to assume a favorable appearance, as three of them are already healed, and only the fourth, which is serious, remains and still confines me, for the most of my time, to the bed, and permits me only to drag myself occasionally along my chamber on crutches." He does not seem to have been satisfied with his early treatment, for on the 7th of April, 1757, he wrote from Falmouth, England: "Agreeably to the advice of all the surgeons of New York to drink the Bath waters in England, I embarked last month," etc. He desired permission "to proceed to London to have my wounds examined by surgeons of more skill than those in America, as I am certain that, had I in the first instance fallen into skilful hands, I should now be cured. . . . . As regards my wounds, the principal one continues open." He wrote again from Bath on the 5th of August, 1758, complaining of destitution, but made no allusion to his health (*see* "Documents relative to the Colonial History of New York," vol. x.). In a note in Thacher's "Medical Biography," p. 327, it is stated that Dieskau died in 1768, of his wounds. A humorous account of the battle is given in a dialogue between Marshal Saxe and Dieskau in the Elysian Fields (*see* same reference as above).

These wounds appear to have been—1. A gunshot-wound of the hips, traversing the bladder, and causing a urinary fistula; 2. A gunshot-fracture of the thigh; and 3. A gunshot-fracture of at least one knee. Recovery under such a complication of severe gunshot-wounds is the highest possible proof of the skill of the surgeon.

with great and immediate relief.[1] He attended Franklin in his last illness, which was caused or aggravated by a urinary calculus, and subsequently wrote an account of his last days.

As a teacher he deserves the first rank. He regarded surgery not as an art simply, but as a science, and urged his students to become medical as well as operative surgeons. He thus taught the qualifications and duties of the surgeon.[2] "Besides a competent acquaintance with the learned languages, which are to lay the foundation of every other acquisition, he must possess an accurate knowledge of the structure of the human body acquired not only by attending anatomical lectures, but by frequent dissections of dead bodies with his own hands. This practice cannot be too warmly recommended to the students of surgery. It is from this source, and a knowledge in hydraulics, they must derive any adequate notions of the animal economy or physiology. . . . There must be a happiness, as well as art, to complete the character of the great surgeon. He ought to have firm, steady hands, and be able to use both alike; a strong, clear sight, and, above all, a mind calm and intrepid, yet humane and compassionate, avoiding every appearance of terror and cruelty to his patients, amid the most severe operations." He recommends the young surgeon to study attentively the works of Pott,

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[1] This statement is current, but it needs confirmation. Dr. Samuel Bard was the attending physician, and at Washington's request Dr. Bard, Sen., was called into consultation.—*Mc Vicar's* "*Life of Bard.*" Washington makes the following allusion to the case in a letter dated at New York, July 3, 1789: "I have now the pleasure to inform you that my health is restored, but a feebleness still hangs upon me, and I am much inconvenienced by the incision, which was made in a very large and painful tumor on the protuberance of my thigh. This prevents me from walking or sitting. However, the physicians assure me it has had a happy effect in removing my fever, and will tend very much to the establishment of my general health. . . . I am able to take exercise in my coach by having it so contrived as to extend myself at full length in it." September 8th, he writes stating that he was not yet free from the pain of the wound, adding, "The part affected is now reduced to the size of a barley-corn. By Saturday next, which will complete the thirteenth week, I expect it will be skinned over." He also says that he "had no conception of being confined to a lying posture on one side six weeks, and that I should feel the remains of it more than twelve."—*Sparks's* "*Writings of Washington,*" vol. x.

[2] Introduction to his work on Fractures.

Bromfield, Sharp, Gooch, White, of Manchester, and Le Dran.

In the following statement he reduces his opinions to an axiom which may well be preserved: "Whoever has acquired just and general ideas of the nature of a disease will seldom be at a loss how to apply them on particular occasions; and, to him who wants those ideas, no rules or directions will be of much consequence."

He concludes his introductory as follows: "As to those gentlemen who will neither read nor reason, but practise at a venture, and sport with the lives and limbs of their fellow-creatures, I can only, with Dr. Huxham, advise them seriously to peruse the sixth commandment, which is, 'Thou shall not kill.'"

His student and biographer, Dr. Mease, thus speaks of the qualities of Dr. Jones as a teacher of surgery: "Viewing the science in an enlarged and honorable light," says his biographer, a former pupil, "as comprehending the most extensive view of our nature, and as tending to the alleviation and abridgment of human misery, he taught his pupils to despise the servile conduct of those who consider the profession as worthy of cultivation only in proportion to the emoluments which it yields, and to rely upon the solidity of their own endowments, as the best security of general esteem, and for the acquisition of business."

In 1784 King's College was reorganized under the title of Columbia College, and provision was made for the renewal of the medical school by the creation of the usual professorships. But those appointed did not all accept the positions offered them, and the medical department did not go into active operation. The chair of surgery was tendered to Dr. Charles McKnight.[1] He was a young man, thirty years of age, and had served during the seven years' war of the Revolution, then just closed. In the army he had risen to a high position, through the favor of the commander-in-chief, though he was but a student when he first entered the service. During his brief residence of less than ten years in New York, he advanced rapidly as a surgeon. He performed with great success some of the most difficult operations, and his teachings of anatomy and surgery attracted large classes of students. He was a surgeon of brilliant genius, expert, versatile, and capable, had he lived, of attaining the highest eminence in his profession.

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[1] Dr. Charles McKnight was born on the 10th of October, 1750, at Cranberry, Monmouth County, New Jersey, of Irish parentage. He graduated at Princeton, and received the degree of A. B. in 1771. He began the study of medicine with Dr. Shippen, of Philadelphia, but the Revolutionary War interrupted his studies, and he entered the army. He was honored by the commander-in-chief for his services, and promoted to the rank of Senior Surgeon of the Flying Hospital of the Middle Department. At the close of the war he settled in New York, and attained eminence as a surgeon, having but a single rival, Dr. Bayley. He died in 1791, aged forty-one years, of pulmonary disease.

Dr. Nicholas Romayne addressed a memorial to the Regents, dated January 11, 1790, in which he stated that "in the year 1787 he instituted a college in the city of New York for teaching the various parts of science, comprehended in a course of medical education in the most respectable universities in Europe. . . . That during the winter sessions, beginning the first Monday in November, and ending the third Saturday in April, lectures are delivered on the Practice of Physic, Anatomy, the Institutions of Medicine, Midwifery, and Surgery, and in such manner that two lectures are delivered a day, five days in the week during the said session." The summer course extends from the first Monday in May to the third Friday in August, two lectures being given daily. He adds: "To promote the said institution, the Corporation of the city of New York have been pleased to commit to the charge of your memorialist the sick in the Almshouse and Bridewell; whose diseases are registered, together with daily reports of the symptoms, the prescriptions, and the effects of medicine, for the further improvement of the students of physic; and that during the winter session, clinical lectures are delivered every Saturday, on cases of the most importance, selected from the number of sick." Appended to the memorial was a list of thirty-seven students who attended this school in 1790.

It is interesting to notice that in Dr. Romayne's school the term of lectures was six months in the fall and winter, and four months in the summer—both terms comprising ten months of the year. In this respect it fully complied with the requirements of the most ardent reformers of our system of medical education. Again, clinical teaching formed a most important part of the course, regular lectures being given at the bedside of the sick every Saturday. Dr. Hosack, who attended these lectures in 1788–'89, says that the Almshouse was attended by Dr. Romayne, Dr. Benjamin Kissam, and Dr. William Moore, as physicians, and Dr. Wright Post as surgeon, who gave "a valuable course of clinical practice."[1]

Dr. Romayne's project failed, but it undoubtedly led to the organization of the Medical Department of Columbia College.

In 1792 another effort was made to organize the Medical Department of Columbia College. The general professorships were again assigned, that of Surgery to Dr. Wright Post, and that of Anatomy to Dr. Richard Bayley. Dr. Post, however, went to Europe to complete his studies, and Dr. Bayley meantime gave both courses. On Dr. Post's return, Dr. Bayley continued in the chair of Surgery and Dr. Post took the chair of Anatomy.

Dr. Richard Bayley[2] was the contemporary of Dr. McKnight, and five years his senior. He had received a thorough medical education, having spent several years abroad, and much of the time was a private pupil of Dr. William Hunter. He commenced practice in 1772, with his preceptor and father-in-law, Dr. Charlton. His study of the pathology of croup led him in 1775 to revisit England, where his researches attracted much attention from Michaelis, William Hunter, and others. In 1776 he returned to New York as surgeon in the army under Lord Howe—not, however, having any sympathy with the English cause. Dr. Bayley delivered lectures on surgery in 1787, in connection with Dr.

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[1] "Essays," vol. iii., p. 189.

[2] Dr. Richard Bayley was born in Fairfield, Conn., 1745; in 1766 he began the study of medicine with Dr. Charlton, of New York; visited London in 1769–'70; returned to New York in 1772, and again visited London in 1775. In 1776 he returned to New York as surgeon in the English army, and proceeded to Newport, R. I. He resigned his commission in 1777, and settled again in New York; was appointed health-officer of the port of New York in 1795 or '96, and died in 1801 from typhus fever contracted while in the discharge of his duties.

Wright Post, who lectured on anatomy. Their advertisement appears in the newspapers of that date.

In 1788 this course of private instruction was interrupted by the Doctors' Mob, which completely destroyed Dr. Bayley's cabinet, a very valuable collection for that day. He died in 1801, of fever contracted on shipboard while acting as health-officer.

Dr. Bayley was distinguished as a clear, precise, and practical lecturer, drawing his illustrations from his own experience and observations. "He had a high character as a clinical instructor—was a bold operator—a prompt practitioner, of rapid diagnosis, and unhesitating decision."

In the latter part of this century we find, among the surgeons of New York, Dr. Paul Michaux, a student of John Hunter, and a member of the Royal College of Surgeons, London. He died young, but is spoken of as a man "whose education and talents qualified him to take a distinguished stand as a practitioner of medicine, and especially as a teacher of anatomy and surgery."

Dr. Valentine Seaman,[1] through whose exertions chiefly vaccination was introduced into New York, taught surgery at first to private classes, but afterward publicly in the New York Hospital in 1811.

From about 1796 to 1807, when the College of Physicians and Surgeons was organized, Dr. Wright Post[2] taught anatomy and surgery, apparently without a rival, in Columbia College. In 1810 the chair was divided at his special solicitation, and Dr. Valentine Mott was appointed to the separate chair of Surgery. From this time Dr. Post taught surgery only clinically, remaining in the chair of Anatomy in connection with the schools with which he was subsequently connected. He died in 1828, aged sixty-two years. In addition to his school appointments, Dr. Post was surgeon to the New York Hospital for upward of thirty-five years.

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[1] Dr. Valentine Seaman was born of Quaker parentage, April 2, 1770, in New York; studied medicine with Dr. Nicholas Romayne, who was then much interested in teaching medicine and surgery at the City Almshouse, which Seaman entered as resident-physician. In 1791 he attended lectures at the University of Pennsylvania, where he received his medical degree. In 1796 he became one of the surgeons of the New York Hospital. He died in June, 1817, of pulmonary consumption.

[2] Dr. Wright Post was born at North Hempstead, Queen's County, New York, February 19, 1766; was educated by Daniel Bailey, a teacher in that locality; at fifteen he entered the office of Dr. Richard Bailey; at the age of nineteen (1784), went to London and became the house pupil of Mr. Sheldon; in 1786 he returned to New York; married a daughter of Dr. Bailey in 1790; in 1813 received the honorary degree of Doctor in Medicine from the Regents; in 1821 elected to the office of President of the College of Physicians and Surgeons; in 1826 resigned; died June 14, 1828, at his country residence at Throg's Neck, aged sixty-two.

Dr. Post had but limited literary advantages, having commenced the study of medicine at the age of fifteen years. His medical education was, however, thorough, as he enjoyed the special instruction of Dr. Richard Bayley in this country, and of John Hunter and Mr. Sheldon, of London. At a later date he was a pupil of Mr. Cruickshank, of London, and learned from him the art of making fine injections and dissections, in which he excelled. As a practitioner of surgery, Dr. Post was peculiarly successful. He early performed new and important operations with success, and this brought him rapidly into public notice. His deportment was such as to inspire confidence and respect, both with patients and with his fellow-practitioners. Dr. Mott, his most eminent pupil, thus speaks of him as a teacher: "We are not sensible of ever having listened, during the course of our studies, to any teacher, either in this country or Europe, whose lessons were better calculated than his to furnish accurate information." He adds: "As an anatomist his knowledge was minute, thorough, and comprehensive; as a surgeon he was acute, dexterous, elegant, and masterly; as a physician, discerning, practical, and judicious."

Dr. Post might well be regarded as the legitimate successor of Dr. John Jones in the history of surgical instruction in New York. He was the pupil of John Hunter, as Dr. Jones had been of William Hunter, and brought to his professorship that native dignity of character and wealth of intuitive and acquired knowledge that so exalt in the minds of pupils both the position of the teacher and the science which he teaches. Such instructors not only elevate their profession and render it dignified and honorable, but they fire the ambition of the more noble and ingenuous students who, stimulated by their example and precepts, pursue with still greater enthusiasm and ardor the course of study and practice marked out to them. Dr. Post lived to see pupils, into whose minds he had instilled an ardent love of surgery, largely extend the bounds of that science, and in its practice attain to far more elevated heights than he had reached during a long and most successful career.

In 1807 the Regents of the University of the State of New York organized the College of Physicians and Surgeons, and appointed a Faculty. The chair of Surgery and Obstetrics was assigned to Dr. David Hosack.[1] He gave but a single course. His introductory lecture was on the "Surgery of the Ancients," and was a very learned inquiry into the state of surgery in ancient times.

Dr. Hosack paid much attention to surgery during the first ten or fifteen years of his practice, and performed many capital operations with success. But this was the only occasion on which he seems to have attempted to teach surgery in a formal manner.

In the following year the chair of Surgery was united to that of Anatomy, and Dr. John Augustine Smith appointed professor of these branches. This position he retained until 1814, when, on the union of this institution with the Medical Department of Columbia College, Dr. Wright Post became his associate. He again filled the chair of Anatomy in the College of Physicians and Surgeons in 1826, now united to that of Physiology, which he retained until 1834, when anatomy was detached, and he continued to teach physiology until 1843, when he retired altogether. He died in 1865, at the advanced age of eighty-four years.

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[1] Dr. David Hosack was born in New York, August 31, 1769; entered Columbia in 1786, and, after two and a half years, entered Princeton College, where he received the degree of Bachelor of Arts, 1789; studied medicine with Dr. Richard Bailey; attended lectures at the University of Pennsylvania, and received its degree of Doctor in Medicine, 1791; commenced practice at Alexandria, Virginia; returned to New York after one year; visited Edinburgh and London; returned to New York in 1794; Professor of Botany in Columbia College in 1795, of Surgery in College of Physicians and Surgeons, 1807, of Materia Medica and Botany in Columbia College, 1809, Physic and Clinical Medicine in College of Physicians and Surgeons, 1814; practised medicine in Rutgers Medical College, 1826; died December 23, 1835, aged sixty-seven.

The course of lectures which Dr. Smith gave on surgery was very complete for that period, if we may judge from the syllabus which he published. He was an elegant writer and an accomplished physician.

In 1809, Dr. Valentine Mott, a pupil of Dr. Valentine Seaman, and a graduate of Columbia College, returned from Europe, where he had spent some three years in study under the tuition of the greatest masters of surgery of that period, viz., Astley Cooper, Abernethy, Home, Thompson, etc. He immediately obtained permission to give a course of lectures and demonstrations on operative surgery in the anatomical rooms of Columbia College.[1] The course attracted much attention, for we find Dr. Edward Miller and other eminent physicians in attendance. The result of these lectures was happy, so far as they affected the advancement of the lecturer, for we find that, at the solicitation of his old preceptor, Dr. Post, Dr. Mott was soon after appointed Professor of Surgery in Columbia College without his previous knowledge or request.[2] In 1814 Columbia College became incorporated with the College of Physicians and Surgeons, and Dr. Mott was appointed to fill the chair of the Principles and Practice of Surgery.[3]

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[1] This course was given in the spring of 1810.

[2] The appointment was made September 11, 1811.

[3] The following is the syllabus of Dr. Mott's course of lectures: The course was divided into—1. Operative Surgery; 2. Medical Surgery. "The first comprehends the various operations and accidents to which the body is liable, and the second the numerous diseases which fall under the notice and care of a surgeon." The following subjects were treated of in the operative part of the course: Irritation and sympathy, inflammation, injuries of the head, aneurisms, hydrocele, diseases of the testicles, breasts, retention and suppression of urine, diseases of the eyes, fistula lachrymalis, polypi of the nose, removal of the tonsil-gland, dropsy of the abdomen, fistula in ano, piles and excrescences, amputations, amputation and cancer of the penis, tic-douloureux, bronchiotomy, lithotomy in men, lithotomy in women, hernia, fractures, sprains, dislocations. The second division of the course, or the diseases of surgery, embraced the following subjects: Gonorrhœa, chancre, warts and anomalous affections, erythema mercuriale, scrofula, diseases of the bones, cancer, wounds, gunshot-wounds, frost-bitten limbs, burns and scalds, tumors, bandages, poisons.

He remained in this position till 1826, when he resigned with the other members of the Faculty.

In 1811, Dr. Romayne again revived his project of a medical school, and an organization was effected, under the title of "The New Medical Institution."[1] The chair of Anatomy, Physiology, and Surgery was filled by Drs. Thomas Cock and Valentine Seaman. In 1814 Dr. Alexander H. Stevens[2] succeeded to the professorship of Surgery, which he held until 1816, when the school was discontinued.

In 1826, on the resignation of the Faculty of the College of Physicians and Surgeons, Dr. Stevens was appointed to the chair of Surgery vacated by Dr. Mott, which he retained until 1837, when he was appointed Professor of Clinical Surgery; in 1840 he was made Emeritus Professor of Surgery in the same college, and in 1843 he was raised to its presidency. He retired in 1855. Dr. Stevens was surgeon to the New York Hospital from 1817 to 1839, and is still one of its consulting surgeons. He received his literary education at Yale College, and studied medicine under Dr. Edward Miller. He graduated at the University of Pennsylvania, and subsequently studied in London under Cooper and Abernethy. He served as surgeon in the War of 1812. As a teacher of surgery the career of Dr. Stevens was comparatively brief. He taught but ten years in a college whose classes were of any considerable importance. But his instruction was of the most practical kind. He had a highly philosophical mind, and was far more desirous of inculcating the principles of the science of surgery than illustrating its art. He had a happy but quaint style of delivery, and often enforced his opinions with the most uncouth illustrations. He was thus always interesting, always piquant, and very instructive. Although Dr. Stevens performed many important operations, he was never as fond of this branch as of the principles of surgery. But it was remarkable how successful his severe operations were! He attributed this success more to his medical than to his operative skill.

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[1] The project seems to have been to establish an institution on the basis of the National Institute of France. The following was the organization of the Medical Faculty:

Institutes of Medicine, Practice of Physic, and Forensic Medicine, Nicholas Romayne, M. D., and John Watts, M. D.

Materia Medica and Mineralogy, Archibald Bruce, M. D.

Anatomy, Physiology, and Surgery, Valentine Seaman, M. D., and Thomas Cock, M. D.

Chemistry and Natural Philosophy, Mr. John Griscom.

Midwifery and Diseases of Women and Children, Robert Bayard, M. D.

Dr. Seaman gave a course of lectures on Clinical Surgery in the New York Hospital.

[2] Dr. Alexander H. Stevens was born September, 1789, in the city of New York: graduated at Yale College, 1807; began the study of medicine with Dr. Edward Miller; attended his first course of lectures at the College of Physicians and Surgeons, and the second at the University of Pennsylvania, where he graduated. In 1811 he took passage for France, and was taken prisoner by an English cruiser. He afterward visited London and Paris, and on attempting to return to New York was again taken prisoner. He finally returned and enlisted in the army as surgeon; on returning to practice, he was appointed to the chair of Surgery in the New Medical Institution in 1814, which he held until the school was closed in 1816. Dr. Stevens, Professor of Surgery, College of Physicians and Surgeons, 1826; Emeritus, 1837, President, 1840. Died ——.

In 1826, the Rutgers Medical College was established by the members of the Faculty of the College of Physicians and Surgeons, who had resigned in a body. The chair of Surgery was filled by Dr. Mott. This school ceased to exist in 1830, and Dr. Mott was appointed (1831) Professor of Operative Surgery and Surgical Anatomy in the College of Physicians and Surgeons. This place he held until 1837; when the Medical Department of the University of New York was organized, 1840, Dr. Mott was appointed Professor of Surgery. He resigned this professorship in 1850, and was elected Emeritus Professor of Operative Surgery and Surgical Anatomy in the College of Physicians and Surgeons. In this place he remained until 1852, when he resigned, and accepted the same position in the University Medical College. He continued in this chair until his death in 1865.

Thus, for a period of more than half a century Dr. Mott was a teacher of surgery in New York. During that long period he was also an active practitioner, and achieved results in operative surgery hitherto believed to be beyond the bounds of possibility. His career was an assured success from his first appearance upon the stage. His reputation as a student of surgery preceded his return home. Said the late Dr. J. M. Smith, himself present as a medical student: "When Dr. Mott appeared in the lecture-room of the College of Physicians and Surgeons, soon after his return, in company with the professor, his appearance made a marked and most favorable impression upon the class. His dress was scrupulously neat, his hair powdered, and his bearing courtly and dignified. All of us regarded him with a feeling of deference amounting to awe." His first effort in the lecture-room was happy, and secured him almost immediately the professorship of Surgery in the College of Physicians and Surgeons. From that date for fifty-five years he never failed to secure the largest attendance of the students of the class.[1]

It will be seen that the professional lives of Mott and Stevens run parallel for upward of forty years. As teachers of the same branches in our medical schools, and as surgeons to the same hospital, they were brought much in contact. They were, indeed, the complement of each other; Stevens was devoted to the science, Mott to the art of surgery, and each was especially great in his own field. They were the Cooper and Abernethy of New York.

On the retirement of Dr. Stevens from the chair of Surgery in the College of Physicians and Surgeons, in 1837, Dr. Alban G. Smith (or, as subsequently written, Goldsmith), of Kentucky, was appointed his successor, but retained the place only two years. He died in Vermont, in 1861, aged sixty-seven. Dr. Smith enjoyed a wide reputation as a surgeon in Kentucky, but his success as a teacher was not equal to the anticipations of his friends.

We have now passed in review the first three-quarters of the century just closed. This terminates the period of the past, and brings us to contemporaneous surgery. We have ventured to place an estimate upon the services of the older teachers of surgery, noticing the leading events in their professional lives, and to indicate, however imperfectly, the position they will severally take in the history of surgery in New York.

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[1] Dr. Valentine Mott was born at Glen Cove, L. I., August 20, 1785; graduated in medicine at Columbia College, 1806; pupil of Sir A. Cooper two years; Professor of Surgery in Columbia College, 1811; in College of Physicians and Surgeons, 1814; in Rutgers Medical College, 1826; Professor of Operative Surgery, and Surgical and Pathological Anatomy, College of Physicians and Surgeons, 1831; Professor of Surgery, University Medical College, 1840; Emeritus Professor of Operative Surgery, College of Physicians and Surgeons, 1851; and in the University Medical College, 1852. Died, April 26, 1865, in his eightieth year.

The instructors in surgery during the last quarter of a century are for the most part still living ; and it will be proper to notice only the events connected with the creation of professorships, and the changes of professors, to complete the historical details.

In 1840, Dr. Willard Parker was appointed to the vacant chair of Surgery in the College of Physicians and Surgeons, which place he occupied alone until 1860, a period of twenty years, when Dr. Thomas M. Markoe was associated with him as adjunct professor. This connection still continues.

In 1850, Dr. Samuel D. Gross, of Kentucky, was appointed to the chair of Surgery in the University Medical College, vacated by Dr. Mott. He gave but one course of lectures, and retired in 1851. His place was filled by the appointment of Dr. Alfred C. Post, who still retains the position.

In 1850, the New York Medical College was organized, and the chair of Surgery was filled by Dr. Abraham L. Cox. He gave but one course of lectures, and on vacating the place was succeeded by Dr. J. M. Carnochan in 1851. Dr. Carnochan retained the professorship until 1860, when he was assigned to the chair of Clinical and Operative Surgery, and Dr. Benjamin I. Raphael was appointed Professor of the Principles and Practice of Surgery.

In 1860, the Bellevue Hospital Medical College was organized, and the following arrangement of the surgical instruction was made : Dr. James R. Wood, Professor of Operative Surgery and Surgical Pathology ; Dr. F. H. Hamilton, Professor of Military Surgery, Fractures, and Dislocations ; Dr. Lewis A. Sayre, Professor of Orthopedic Surgery ; Dr. A.

B. Mott, Professor of Surgical Anatomy; and Dr. Stephen Smith, Professor of the Principles of Surgery.[1]

In glancing over the period so cursorily passed in review, it is proper to notice that anatomy, so closely allied to surgery, was cultivated during this period with the greatest zeal. In the first half of the century we note the names of Dr. Samuel Clossey, the colleague of Dr. John Jones, and Professor of Anatomy in King's College, and Dr. Bayley, Dr. Wright Post, Dr. McKnight, Dr. Paul Michaux, all of whom taught anatomy and surgery with great success to private classes previously to the reorganization of Columbia College, in 1791. Dr. Wright Post held the chair of Anatomy under the reorganization until Dr. Bayley retired from the chair of Surgery, when the two branches were united, and Dr. Post assumed the entire duties, and continued to discharge them until 1811. In the latter half of the century are the familiar names of Dr. John D. Godman, in Rutgers Medical College, Dr. George Macartney Bushe, of the same school; of Dr. Granville Sharpe Pattison, in the University Medical College; and of Dr. Robert Watts, of the College of Physicians and Surgeons.

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[1] From this review it appears that during the century under consideration, 1767 to 1867, seven professorships of Surgery were instituted, viz.: In King's and Columbia College, 1767,1783, and 1792; Coll. of Phys. and Surg., 1807, and the New Institution, 1811; Rutgers Medical College, 1826; University Medical College, 1841; New York Medical College, 1850; Bellevue Hospital Medical College, 1860. The following surgeons have filled these several chairs: King's College, Dr. John Jones, 1767–'75; Columbia College, Dr. Charles McKnight, 1784–'91; Dr. Richard Bayley, 1792–'96; Dr. Wright Post, 1796–1811.

College of Physicians and Surgeons, Dr. David Hosack, 1807–'08; Dr. John Augustine Smith, 1808–'14; Dr. Valentine Mott, 1811–'26; Dr. Alexander H. Stevens, 1826–'37; Dr. Alban G. Smith, 1837–'39; Dr. Willard Parker, 1840–'60; Dr. Thomas M. Markoe, 1860–'67. The New Medical Institution, Dr. Thomas Cock, 1811–'14; Dr. Alexander H. Stevens, 1814–'16.

Rutgers Medical College, Dr. Valentine Mott, 1826–'30.

University Medical College, Dr. Valentine Mott, 1840–'50; Dr. S. D. Gross, 1850–'51; Dr. Valentine Mott, 1851–'57; Dr. A. C. Post, 1857–'67.

New York Medical College, Dr. A. L. Cox, 1850–'51; Dr. J. M. Carnochan, 1851–'60; Dr. B. I. Raphael, 1860–'65.

Bellevue Hospital Medical College, Dr. James R. Wood, Dr. L. A. Sayre, Dr. A. B. Mott, Dr. F. H. Hamilton, 1860–'67; Dr. Stephen Smith, 1860–'65.

It is also interesting to notice that in the early schools the annual term for a course of lectures was six months, November to May. Dr. Romayne lays particular stress upon the fact that he gave a six months' course. It is also apparent that clinical teaching was early recognized as an important element in the course of instruction. Clinical courses in medicine and surgery were given as early as 1788; and, about 1792, the New York Hospital became the great centre of clinical teaching. Indeed, it may be said that, of the institutions of New York which have contributed most to the cultivation and advancement of surgery, the New York Hospital stands preëminent. It owes its existence in no inconsiderable degree to the fostering care of Dr. John Jones. He planned the construction of the first buildings on principles which have borne the test of the latest investigations of sanitary science, and raised at home and in London a large portion of the funds for their erection. He did not enjoy the fruits of his labor, as the buildings, when nearly completed, were destroyed by fire, and the Revolution put an end to the effort. When the hospital was finally organized, in 1791, it had as its surgeons Bayley, Tillary, Post, and Kissam, and to them have been added Borrowe, Seaman, Mott, Stevens, Rogers, and Watson, all of whom have passed away, but who were active teachers of surgery in their day, and represented the highest order of surgical talent at home and abroad.

No hospital in this country and few hospitals in Europe can boast of such an array of talent in its surgical staff. Within its walls has been performed a larger number of important operations than in any other whose records we have consulted. There Wright Post successfully ligated the carotid and subclavian for the first time; there Mott accomplished the ligation of the innominata, and made some of his most important exsections; there Stevens exsected the first superior maxilla, and performed staphylorraphy for the first time in this country; there Kearney Rogers ligated the left subclavian within the scaleni.

During the first half of the present century the New York Hospital was the great school of surgery of this country.

This distinction is due not more to the distinguished surgical staff, which it has always maintained, than to its wise liberality toward students and teachers. It early made it obligatory upon its medical officers to teach clinical medicine and surgery, and, to give the students the full benefit of their instruction, the rules required that consultations should be held publicly in the theatre.

Within the last ten or fifteen years, Bellevue Hospital has been gradually rising into distinction as a school of clinical medicine and surgery. Its central location and the facilities for teaching granted by the liberality of the Commissioners of Public Charities and Correction have contributed to render it a favorite resort of students. Its surgical staff comprises most of the present teachers of surgery in New York, which is a sure presage of the present and future importance of this hospital as a centre of surgical instruction.

The success which attended the establishment of medical schools in this city and in other parts of the country was very marked. At the period of their first institution medical students went abroad to complete their studies. In the early part of the present century we find that this custom had greatly diminished; and a medical writer of that period congratulates the Government on the saving of gold to the country on this account. But a better test of success is found in the qualifications of the graduates. The rank of the medical profession in this country has been deservedly high; the most eminent medical men of the past century received their diplomas from our native schools. The instructions of Jones, Bayley, Post, Mott, and Stevens, were, in the opinion of competent authority, not excelled in the most famous schools abroad.

[TO BE CONTINUED.]

Art. II.—*The Criminal use of Proprietary or Advertised Nostrums.*[1] By Ely Van De Warker, M. D., Syracuse, N. Y., Corresponding Member of the Medico-Legal Society of New York; of the Gynæcological Society of Boston, etc.

Mr. President: In compliance with your kind invitation, I have the honor to submit the following paper:

In a series of papers read before the Gynæcological Society of Boston, upon the "Detection of Criminal Abortion," I alluded briefly to the criminal use of proprietary or advertised nostrums.[2] In a more extended notice of the criminal use of these nostrums, I endeavored to arrive at facts regarding the sale of these nostrums in the United States.[3] Until I became interested in the study of this branch of legal medicine, I was not aware of the difficulties in the way of collecting figures upon this subject. Such are the difficulties, however, and such the sources of error, that I do not deem the table, published in the monograph referred to, of sufficient authority to transcribe here. The sale of these dangerous preparations is enormous, so far as I am able to form a conclusion. The sale is increasing. Every facility is afforded for the ready sale of these drugs. The daily press accepts the advertisements of the proprietors of these articles, and such are the profits arising from the sales that they are able to purchase the most prominent and expensive places in the papers for the pernicious notices. It is not uncommon to find their notices published in the advertising department of what are regarded as first-class magazines. And, to the shame of the religious community be it written, it is very common to find these advertisements occupying prominent places in so-called religious journals. Every school-girl knows the meaning and intent of these advertisements. Nor is this the worst: almost every woman believes in the power of advertised pills or drops to accomplish the end for which they are recommended. These wares are unblushingly exposed for sale on the shelves of drug-stores, and are as boldly asked for.

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[1] Read before the New York Medico-Legal Society, June 13, 1872.

[2] *Journal of the Gynæcological Society of Boston*, December, 1871, p. 350.

[3] "Detection of Criminal Abortion and the Study of Fœticidal Drugs," pp. 41. 8vo. James Campbell, Boston, 1872.

Here is a trade which, without stretching a single existing law, may be called illegal and illicit, carried on in open daylight, in the full knowledge of this newspaper-reading public. It is almost impossible to say that women make a misapplication of the wording of these advertisements. An able and intelligent editor once said to me that they carefully excluded all advertisements which seemed to be of a criminal nature. As the term "female irregularity" is invariably interpreted, it means that a woman is irregular when her courses fail to appear, no matter what the cause of the interruption; and thus all "irregularities" being removed, as advertised by these nostrums, these advertisements never fail of being as direct a bid for the attention of the pregnant woman, as those advertisements are which embody a caution for the lady in a "delicate situation" not to use them. Notices containing such direct insinuations are not taken now by respectable journals, so, at least, editors tell me. The advertising departments of a daily paper are never edited. The success of every paper in the land is measured by its advertising patronage. Advertising notices are received and published by men occupying mere clerical positions, and a pernicious advertisement is rarely detected until after it is published, and the paper comes under the eyes of a critical reader, or editor-in-chief.

I leave it to members of the Society, better qualified to say, whether this class of advertisements are amenable to existing laws or not. It is an axiom among business-men, that advertising is the life of business, and surely advertising is the life of this trade. Take away from the makers of these demoralizing compounds their facilities for reaching the public notice, and their wares will not be on the shelves of the retail druggist. This prostitution of the great lever of public education and progress is a sacrilege which demands immediate atonement. Upon the shoulders of the law-makers rest many sins of the law-breakers. If, through want of wholesome laws, or defects in existing statutes, an article which has a malignant influence upon the morals of the community is openly sold, it is sure to find criminal purchasers. In view of the extent of this trade, I am forced to believe that in relation to this crime there exists a moral obliquity in all ranks of native-born society. Now, an ordinance for the suppression or punishment of an offence against society is enacted on the assumption that there exists in every community a certain proportion of law-abiding people. If, in its relation to any given offence, this assumption is false—and in relation to this crime I fear it is—the law is simply an array of words powerless to effect its purpose. In the law which I shall propose for the consideration of the Medico-Legal Society, I shall endeavor to arrest this trade, and vast numbers of criminal abortions, which directly result from it, by the application of the suppressing force of the law to the fountain-head of the evil. The attempt to enforce such a law would test the strength of the law-abiding element in the community, or, in other words, the morality of the people.

The question naturally arises, to what extent is the use of the compounds under consideration, followed by abortion, either criminal or innocent. Considering the vast importance of human gestation, there is no other function so entirely at the mercy of circumstances hostile to its completion. The theory, taught by Taylor and other writers on medical jurisprudence, that abortion from medication is rarely successful, and, when it is so, the mother's safety is seriously affected, is, in my opinion, wrong. There seems to be much evidence, however, that an abortion induced medically is more liable to be followed by fatal results than one procured by instrumental interference. This statement may be proved by the current criminal items of the daily newspapers. I have been some time in collecting twenty-one cases of death from criminal abortion from various newspapers. Of this number, ten deaths resulted from abortions from medication, five cases implicated medical men, and in six cases no statement was made of the means used. Rejecting those notices of fatal abortions implicating medical men, as very probably induced by means other than the administration of drugs, we have a large majority left in which it is stated drugs were used.

The chief source of danger lies not in the abortion, but in the use of drugs, which are of themselves fatal poisons. Savin, tansy, and rue, are examples of drugs which, even when taken with care, are liable to jeopardize the woman's life, without disturbing the contents of the womb. These drugs may also be named as potent abortifacients when their use is persevered in with small doses.

A large class of women are very confidential with their medical adviser. From these women I have learned of numerous undoubted ovular abortions following the use of advertised nostrums—cases in which, after a menstrual lapse of one or two months, there was a profuse discharge of blood with clots, attended with expulsive pains, and from the woman's description it was presumably an abortion.

I know many married women who have gone years without the birth of mature children, who resort habitually to some one of the many advertised nostrums with as much confidence of "coming around" as if they repaired to the shop of the professional abortionist. I could detail several cases of this kind, if absolute proof of the dangerous nature of these compounds were necessary. I think but few medical men would be inclined to deny any power, as abortifacients, to these mixtures. It must be borne in mind that, when these compounds are used with criminal intent, they are resorted to in a desperate emergency, and with a reckless disregard for personal safety. Under these circumstances, any thoroughly purgative drug might prove an efficient abortifacient; persistence in the use and excess in the dose being the conditions necessary. I have already reported a case, in that portion of my monograph on fœticidal drugs, in which an infusion of "pink and senna" terminated a pregnancy some months advanced. In this case, an excessive use of a mixture not deemed fœticidal gave it criminal potency.

In the morbid anxiety for relief from their unpleasant burden, many women take enormous doses of these mixtures. One case came to my knowledge, in which a young woman took repeatedly doses of fifteen pills of the kind called "Sir James Clark's," in her desperate anxiety. The only result was hypercatharsis and extreme prostration, and months after her health was not restored. In this case no pregnancy existed.

It is in this tendency to overdose, rather than underdose, that the chief power of these mixtures, as fœticidal agents, lies. Although a great variety of form exists in the manufacture of these compounds, yet they can be conveniently grouped in two classes, the fluid and the solid-pill form. This division governs, in a great measure, their potency. Many of the potent fœticidal agents are not used with advantage in pill-form. The oils of savin, tansy, and rue, are not available in that form. Aloes, hellebore, powdered savin, ergot, iron, solid extracts of tansy and rue, so far as I am able to form an opinion—and I have studied the subject quite carefully—are the main ingredients in the pill-form. It will be evident, from this statement, that a great difference exists as to the mode of action, and the extent of danger between the two groups. One specimen of an extensively-advertised mixture of what is known as "periodical drops" was given me by a married lady who had taken two teaspoonfuls, and was obliged to desist because of its irritating effects upon the stomach. This sample appeared to be composed of some fluid extract, upon the surface of which floated about three drachms of oil-globules, of a light-orange color, with the odor and taste of savin. The bottle was a thin panel of two ounces and three drachms' capacity. The dose was from three to four teaspoonfuls a day. I deem this mixture highly dangerous. It is evident that, if care was not taken to shake the bottle, an overdose of the powerful oil floating upon the surface of the mixture might easily be taken. Another preparation, also well known, and of which there are extensive sales, is composed mainly of oils dissolved in alcohol, and in which a futile attempt is made to mask the odor and color of oil of tansy by wintergreen and coloring-matter. While these two are the most dangerous of the many mixtures I have seen, there are others which are simply inert. These nostrums in the form of pills, when taken by myself in the dose directed in the printed labels, gave no results either upon bowels or circulation. How many more of the scores of these nostrums, which have been advertised and sold for the purpose of correcting "female irregularities," are pure humbugs, in their composition, it is impossible to say. The term "humbug" here must be used in an extenuating sense; for the fact that these inert mixtures are sold to those with a criminal intent, and are purposely made innocuous, is, strange to say, an evidence of honesty not yet wholly destroyed. If the question is asked to what extent the use of these advertised preparations is actually dangerous to life, I must say that, so far as my observation goes, all of them examined by me, with the exception of the two already mentioned, are free from any direct poisonous action upon the human system. But, their effects upon the health are most disastrous. Hæmorrhoids, nervous prostration, debility, a persistent gastric and intestinal irritation, and irritation of the bladder, are results which I believe uniformly follow their criminal use. A criminal use implies a persistence in the use which inevitably leads to functional derangement.

It is important that the physician should become acquainted with the appearance and method of putting up for the trade these periodical pills and mixtures. Their appearance is characteristic, being the result of an apparent attempt to conceal the nature of the contents of the bottle or box when in use. Thus they are put up in small and partially-opaque glass bottles, in square or in small cylindrical tin boxes, or in very small thin pasteboard boxes, and quite generally having no label pasted directly upon the box, the name and directions being upon a printed wrapper.

I have experimented upon myself with eleven varieties of these nostrums, taken in the dose directed upon the wrapper of each. Two of these were the fluid mixtures before mentioned. The mixture (*a*) caused an uncomfortable feeling of warmth in the stomach, a fulness in the temporal region, frequent desire to urinate, a feeling of weight and oppression at the stomach, loss of appetite, and a high-colored urine, with a strong savin-odor. When pushed to the maximum dose named upon the printed wrapper, the face flushed painfully, the pulse beat with great force, not increased in frequency, other symptoms as above detailed. The fact that the rapidity of the heart's action was not increased, notwithstanding the evident presence of an arterial stimulant, led me to suspect the presence of ergot in large amount. The mixture (*b*) gave the same symptoms, with the addition of pain in the stomach and bowels, and a great amount of flatulence. The urine was voided frequently, and gave a strong aromatic odor resembling that of tansy. The face was not flushed, but there was an uncomfortable feeling in the head, with the pressure-pain which seems to be common to both the oils of savin and tansy. These symptoms were more persistent than in the experiment with the mixture (*a*). My reason for regarding both of these mixtures dangerous I believe to be well founded.

Four samples of pills (*c*), (*d*), (*e*), (*f*), when taken in the dose directed in the printed instructions, gave the following results: After one or two doses a marked cathartic action upon the bowels. The evacuations had a marked aloetic odor. The urine became scanty and high-colored. The cathartic effect was persistent. Flatulence and heat in the stomach and along the track of the colon. When used in the maximum dose, as directed in one sample (*d*), there were tenesmus and a sense of heat at the anus, the feeling of warmth in the track of the colon more marked, and a sense of uneasiness (fulness) of the right side. The aloetic odor not more marked in the evacuations than in samples (*e*) and (*f*). Samples of pills (*g*), (*i*), (*j*), in the minimum doses, simply induced a lax condition of the bowels, with no marked peculiarity. In the maximum doses the laxative action became more decidedly cathartic. In these three experiments I was unable to detect any difference between them and a mild cathartic pill. Samples (*h*) and (*k*), taken in either the minimum or maximum doses, produced no effect whatever, and evidently were perfectly inert.

The experiments, briefly detailed above, extended over a period of about six months. The detection of their criminal use would require that the nostrum be used in its largest dose, which must be persevered in for some time before an abortion would be induced. I believe this to be an imperative condition of their use as successful abortifacients. Samples (*g*), (*i*), (*j*), I regard as humbugs, and would not cause an abortion, unless used by women very liable to external and mental influences. If the patient were to be examined by a physician as to the condition of the bowels previous to an abortion, it possibly may be said that the patient had a diarrhœa. If the criminal use of the nostrum extended over a lengthened period, and the purgative element in the mixture proved to be aloes, she would fail to have the pale, wan look of the face which attends an active diarrhœa. Another point of great importance, in the detection of the criminal use of these nostrums which contain an aloetic or other cathartic, is a periodical laxity of the bowels, from the constant tendency of the bowels to constipate after the over-stimulation by the purgative, and being spurred into action by a repetition of the cathartic dose. This periodicity of the cathartic action would distinguish it from an intended fraud, as chronic diarrhœa. The griping, borborygmus, tenesmus, and, when the use of the nostrum had been long continued in the maximum dose, vomiting also, would intermit the period of the accession of the symptoms corresponding to the renewal of the cathartic dose. When, in the case of a woman in whom we suspect a pregnancy, we have added to the above back-ache, bearing-down, and ovarian pain, showing that the pelvic nerves and vessels have become responsive to the persistent irritation of the cathartic, we have marked evidence of the criminal use of a cathartic nostrum.

This is well illustrated by the following case, kindly furnished by my friend Dr. Frank H. Butler, of this city: Miss Blank, a spare, broken-down woman, aged about thirty-four years, and a confirmed morphine-eater, took one pill of a variety covered by gold foil, contained in a small paper box, the dose being one pill. She first felt a cramping in the stomach, which lasted all night, beginning seven hours after the dose, and lasting until the next day. With this was very active movement of the bowels from noon until the morning of the following day, getting up eight or ten times during the night. The evacuations were watery and of a dark color. There was no tenesmus. There was pain in the back while having the cramps and diarrhœa. I have known these pills to be taken by several women, and each one gave the same history of the effects produced. I regard this preparation, if not positively dangerous to the maternal life, as one which seriously threatens the fœtal life. To show the inclination of women to use this nostrum criminally, it is only necessary to say that the sales of these pills are very large. From the severity of their action, and the nausea and vomiting which very often follow their use, I am inclined to believe that the active ingredient is black hellebore. The throat is often dry, and the face has a blanched appearance. The detection of the use of these nostrums will depend on the nature of the compound. Some one active ingredient generally has a leading place in the mixture. This rule holds good with the fluid as well as the solid mixtures. When iron in some form is added to the nostrum, as it often is, through a mistaken notion of the action of iron as an emmenagogue, it is certainly inert as an abortifacient. The drug most commonly placed in such a combination is aloes, and it is, therefore, important that we understand the peculiar train of symptoms which characterize the use of the drug. Aloes is an anomaly among evacuants. Its action is stimulant to the circulation, rather than depletory. This is indicated by increased heat of surface and quickened pulse. The evidence of this action is also present in the large intestines, as a sensation of heat and fulness along the track of the colon. The urine is scanty and high-colored. The face is inclined to flush, not to blanch and shrink, as in the case of the drastic or hydragogue cathartics. There are often transient shooting-pains and tenderness, with a sensation of heat and fulness over the region of the liver.

There is also local evidence of its criminal use. One of the prominent symptoms is the torturing tenesmus. This symptom would imply its persistent use. There are pains in the back, heat and fulness in the rectum and anus. There is sometimes a frequent desire to urinate, seemingly dependent upon reflex strangury. A symptom always present is the marked and peculiar odor of the aloetic dejection. Unless great precautions are taken as regards ventilation and cleanliness, the strong odor of the stools will linger in an apartment many hours. This retention of the aloetic odor is more marked in the case of small bedrooms, whose walls are hung round with wearing-apparel, the fabrics holding the effluvium.

Another drug, highly active as an abortifacient, and, I believe, existing in several advertised nostrums, is black hellebore, and a word as to the peculiar evidences of its administration may be in place. Small doses would cause increased peristaltic action of the intestines, quite generally followed by heat and a sense of fulness of the pelvic vessels. When used in larger doses, there are repeated painful fluid motions, almost always vomiting, tenesmus, heat through the hips, and bearing down. When any nostrum, composed largely of hellebore, is used to excess, such use would be indicated by pain and pricking in the tongue, fauces, and throat. There may be a painful sense of constriction and strangury of the throat, pain at the epigastrium, and vomiting. The extremities may be cold, and the surface bedewed with a cold, clammy sweat. The pulse is often at fifty, and a case is recorded in which it was as low as thirty beats in a minute.

Savin in powder may be present in some of these nostrums in pill-form, but I cannot speak from knowledge. I know, however, that it frequently enters into the composition of the counter-prescriptions of druggists. The oils of savin and tansy are, I am sure, present in the fluid preparations. As the symptoms attending their criminal use are practically identical, they may be grouped together. The odor of the drugs will be present in the breath and urine. Severe headache, flushed cheeks, and nausea, and especially the pressure-like pain in the temporal region, would be a very usual complication of symptoms, and, as such, ought to direct our attention to the possibility of the criminal use of these drugs. If the use of the drug (savin) is pushed to its cathartic action, the pain and flatulence, and a peculiar burning pain at the anus, frequent micturition, with or without strangury; and, if we add to this the presence of the odor of the drug, we have almost positive proof of its use. Tansy adds to the symptoms, common to both the drugs, a train of phenomena which results from its peculiar action on the nervous system. Its nervous power selects the spinal cord as the field of its primary action. In nervous females small doses may cause convulsions; or, if not such a marked impression, numbness, or pricking of the extremities, may be present. Small doses may also dilate the pupils, or render them immobile. Profuse salivation has been noticed as a symptom of its use. It will be unnecessary to say any thing about the application of these symptoms to a case of suspected criminal use of proprietary nostrums. The fact of a suspected or pending abortion concurrent with the above symptoms ought to lead us to make a careful inquiry.

There is yet another class of advertised nostrums which deserve notice. Two samples of pills which I have examined contained, in the printed directions for their use, the instruction that tansy-tea be drunk morning and night. This is surely a very dangerous direction, and the criminal intent of the proprietor is evident. So far as I am able to judge, both the samples were inert, the maker apparently designing to make up for the deficiency in power inseparable from the pill form of these nostrums as a fœticidal agent, by advising the concurrent use of a potent drug. In the use of this class of nostrums, it is very probable that the woman would attribute any abortion which might result, to the use of the pills, as the tansy-tea is given a secondary place in the directions. In one case which came to my knowledge from the woman herself, she was made very sick from the use of the tansy-tea and was obliged to send for her family physician. The pills caused no appreciable effect.

The law passed in 1868, to check the sale of obscene publications and prints, relates also to obscene advertisements of patent medicines; but would not prevent the publication of advertisements of nostrums calculated to correct "female irregularities," as these advertisements are carefully worded, and could in no sense be called obscene. Yet a trade is permitted in a class of nostrums the very advertisement of which, no matter how carefully and delicately worded, must have a very injurious effect upon the minds of both sexes. One of the most dangerous of these moral effects is the result of the open manner in which the sale of these nostrums is carried on, and the character of the magazines and newspapers which publish the advertisements. To suppress the advertisement, either in newspapers, or by circulars or handbills, of any drug or mixture which is claimed to act as an emmenagogue, or to correct menstrual irregularity, of whatever name or nature, must be as legitimate a matter for corrective legislation as the liquor-traffic, or any other evil, the suppression of which is deemed for the good of society.

In offering, therefore, for the consideration of the Medico-Legal Society, an amendment to the law of 1868, I do so with great diffidence as to the legal part of the remedy, but not with lessened faith that the enactment of such an amendment, and its rigid enforcement, would be a lasting measure for the correction of public morality.

Draft of an Amendment to Chapter 430 *of the Laws of* 1868.

AN ACT to amend an Act entitled "An Act for the suppression of the trade in and circulation of obscene literature, illustrations, advertisements, and articles of indecent or immoral use, and obscene advertisements of patent medicines."

SECTION 1. Section 1 of said Act shall be amended so as to read as follows:

If any person shall sell, or offer to sell, or shall give away or offer to give away, any, or have in his or her possession with intent to sell or give away, any obscene and indecent book, pamphlet, paper, drawing, lithograph, engraving, daguerreotype, photograph, stereoscope, picture, model, cast, instrument, or article of indecent or immoral use, or article or medicine for the prevention of conception or procuring of abortion, *or medicine or nostrum of any kind whatsoever, known as periodical pills, drops, or mixtures of any name or nature, for the regulation of the menstrual function, or female irregularities, or is claimed to act as an emmenagogue to relieve suppressed or interrupted menses caused by pregnancy or not,*[1] or shall advertise the same for sale, or write or cause to be written, or print, or cause to be printed, any circular, handbill, card, book, pamphlet, advertisement, or notice of any kind, stating when, how, or of whom, or by what means, any of the said indecent and obscene articles and things, hereinbefore mentioned, can be purchased or otherwise obtained, or shall manufacture, draw, and expose, or draw with intent to sell or to have sold, or print any such articles, every such person shall, on conviction thereof, be imprisoned in the county jail not more than one year, or be fined not more than one thousand dollars, for each offence, one-third of said fine to be paid to the informer upon whose evidence the person so offending shall be convicted, one-third to the school fund of the county in which such offence shall be committed, and the remaining third to the treasurer of the Female Guardian Society in the city and county of New York, if the conviction is in the said city and county, to be by said treasurer applied to the uses and purposes of said society, as set forth in their charter or act of incorporation; and if the conviction is in any other county of this State, then said remaining third shall be paid to the treasurer of the orphan asylum in said county, if there be one, or in equal portions to all of said asylums, if there be more than one, to be applied to the purposes of said asylum or asylums; and if there be none, to the superintendent of the poor of said county, to be applied to the benefit of the poor of said county.

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[1] The proposed amendment is in italics.

SEC. 2. This Act shall take effect immediately.

It must have great moral force to suppress by legal enactment a trade which has been allowed to attain great proportions, and which, from force of habit, people have come to regard as legitimate. Quetelet, who has generalized with the phenomena of human passion, and has elevated the emotional of our natures to the dignity of an inductive science, embodied in a maxim, that society prepares the crime and the criminal executes it. This crime of the period seems to be a remarkable example of the truth of this. It has its roots in that outgrowth from the purely human in our natures called society. If the same principle which underlies crime in the aggregate, applies to the crime of abortion, some law, like the proposed amendment, which is purely correctional, but also from the nature of its prohibition contains the elements of moral education, ought to be adopted.

ART. III.—*Nephrotomy. Extraction of a Calculus from the Kidney.* By W. W. DAWSON, M. D., Professor of Surgery in the Medical College of Ohio.

"NEPHROTOMY as a Means of treating Renal Calculus" was brought prominently before the profession in 1869, by Thomas Smith, F. R. C. S., Assistant Surgeon to St. Bartholomew's Hospital, in an essay which he read to the Royal Medico-Chirurgical Society of London.

Mr. Smith, in his essay, after referring briefly to the history of Nephrotomy, details his plan of diagnosing renal calculus, suggests an operation for their removal, and discusses the dangers and difficulties of that operation. The following history of the case upon which I operated is given by Prof. Roberts Bartholow, M. D., who had the patient under his care for about two years:

"Mrs. Merk, fifty years of age, has borne nine children, and had always been a healthy and robust woman until eight years ago. When she was forty-two years of age, or eight years since, she had an attack of hæmaturia, in which the loss of blood was considerable, and which was arrested with difficulty. After an interval of three years, or five years ago, she experienced a similar attack. The year following this she bore her last child without accident. Three years ago, when she was forty-seven years of age, the hæmaturia again returned. The attacks were repeated three times within the same year. The menstrual function ceased at this time. At the beginning of her forty-eighth year she began to suffer severe pain in the left side; about this time a febrile movement, having the remittent character, set in, and a tumor was discovered in the left hypochondria. It was also ascertained at this time that a large quantity of purulent matter was passing in the urine. The fever assumed a typhoid type; her mouth became dry and covered with aphthous exudation; her stomach refused all food, and she became excessively feeble and emaciated.

"Such were the particulars furnished me when I came in charge of the case about two years ago. The physicians in attendance having withdrawn, I could obtain no information as to their opinions and method of treatment. She was then in the following state: her decubitus was left latero-dorsal, the left leg flexed on the thigh, and the thigh flexed on the pelvis. She was extremely emaciated; her countenance had an icteroid hue, and indicated great suffering. Her mouth was dry, and she was without appetite; her stomach rejected all food. Her pulse was exceedingly weak and rapid (120); morning temperature 101°, and evening exacerbation, 103°, terminating in profuse sweating. She complained of severe pain in the left side, where there was a tumor of considerable volume. Great tenderness existed in and about the tumor. The fingers could be insinuated between the ribs and the tumor at its upper part, and it extended downward to within three inches of the crest of the ilium. In its long diameter it measured, as nearly as could be ascertained, four inches. It approached within three inches of the umbilicus, and extended deeply posteriorly, apparently to the situation of the left kidney. The attempt to lie on the right side gave rise to a distressing sense of dragging. The tumor changed its position with a change in the posture of the patient, descending when she was raised up, and falling to the right when she was turned on to that side. Its mobility was apparently about two inches in both directions.

"She passed from twenty to thirty ounces of urine daily; it presented a milky appearance, and had the thickness of cream in consistence. The specific gravity of the urine was 1010; when allowed to stand, the supernatant portion was clear, and apparently normal in color and composition, having a faint acid reaction. The sediment occupied about one-third in volume, and, on microscopic examination, was found to consist wholly of pus.

"After an attentive consideration of all the foregoing facts, an abscess of the kidney, most probably due to the presence of a calculus in the pelvis of the organ, was diagnosticated. The grounds for this conclusion were these: The recurring attacks of hæmaturia; the evidence of chronic pyelitis, as furnished by the history of the case; the persistent profuse discharge of pus, and the pain in the region of the kidney; the characteristics of the urine, indicating the addition of pus to the otherwise normal secretion; a continually-enlarging tumor in the region of the kidney.

My colleague, Prof. James Graham, M. D., whom I invited to see the case with me, concurred in this opinion after a careful examination. We then discussed the propriety of an exploratory puncture, and the operation of nephrotomy, but concluded to await the result of the free discharge of pus, which appeared to be taking place through the ureter.

"A regulated supply of nutriment, and a snugly-fitting bandage to support and slightly compress the tumor, were the means of treatment adopted. She rapidly improved in flesh and strength; a marked diminution in the size of the tumor occurred, and in a month she was able to get about the house.

"For two years she pursued her household duties, suffering all the time more or less pain and inconvenience, but having a fair measure of general health. During all this time the tumor could be plainly felt, remained somewhat tender to pressure, always gave pain when she turned on to the right side, and continually furnished to the urine a large amount of pus.

"Three months ago (August, 1872), the pain in the region of the tumor began again to annoy her greatly; it extended downward, also through the lumbar and iliac regions, and along the anterior, crural, and sciatic nerves. She soon became unable to straighten the thigh, and walked with the body bent forward and to the left. The pain increased in severity, and at last became agonizing, so that large doses of morphine were necessary to alleviate her sufferings. An examination of the tumor now revealed some increase in its dimensions. The urine, on examination, was found to contain much less pus than formerly. These facts furnished an explanation of the great suffering now experienced by the patient. The pus, no longer finding sufficient outlet through the ureter, was accumulating, and the enlarging tumor compressed the lumbar and sacral plexus. The operation of nephrotomy appearing to me to afford the only chance of relief to my patient, I requested the coöperation of my colleagues, Profs. Graham and Dawson, who, after much consideration of all the facts in the case, coincided in the view of the necessity for this operation. To Dr. Dawson I leave the recital of the important incidents which led to the extraction of a calculus by nephrotomy on the 24th of October, 1872."

Diagnosis.—It will be seen, from the foregoing history, that this case presented all the rational symptoms of calculus in the kidney, such as pain in the lumbar region and extending down the limb; the products of inflammation, blood and pus, in the urine; persistent gastric irritation; the appearance of a tumor in the region of the kidney; and, lastly, on the disappearance of pus from the urine, this tumor increased in size and painfulness. In the diagnosis made by the attending physicians, Profs. Bartholow and Graham, of a pyelitic abscess, associated with and caused by a calculus, the rational symptoms were next to positive. The exploring trocar, which I introduced on the 19th of October, 1872, and through which several ounces of pus flowed, four days before the operation, was conclusive.

Situation and Size of the Tumor.—The tumor was about the size of two fists placed by the side of each other. It occupied the left lumbar region, extending from the ribs to the crest of the ilium, but distinct from both of them; its most prominent part was that situated nearest the median line, from which it was removed about three inches. Over this internal and anterior portion it could be defined distinctly, but on its lateral aspect, corresponding with the lateral line of the body, it was obscured by the abdominal walls, well supplied with fat; in the loin no trace of it was perceptible—even pressure here gave but little if any pain; the tumor advanced to the front and inclined inward. At its most prominent point it gave no sense of fluctuation, nor was it adherent to the abdominal walls; this was manifest when I introduced the trocar of the aspirator. And, again, there was no evidence of union with the abdominal parietes, such as œdema, redness, and tenderness of the skin at a given point. It was not "an œdematous or fluctuating swelling;" it was not "an abscess pointing;" it was not a "ripe abscess in the loin;" it was not "a stone so large as to be felt from the exterior;" it was not "a concretion of immense bulk that had worked its way partially through the loins by ulceration;" it was not "a tumor and abscess in the loins pointed out by Nature;" nor had "the matter induced absorption of the abdominal walls."

It was, in fact, an abdominal tumor, with every rational sign of its being renal; palpation and percussion could not, but the exploring trocar did, determine positively its composition.

The operation of nephrotomy proposed by Thomas Smith is as follows: "The patient being in the prone position, a longitudinal incision should be made along the outer border of the erector spinæ muscle, beginning at the lower margin of the last rib, and extending downward for four inches toward the ilium. The skin and fascia, the latissimus dorsi, the serratus posticus inferior, and a layer of the fascia transversalis, being divided, the quadratus lumborum is exposed; this, with the erector spinæ, should be drawn toward the middle line with a retractor, and the body of the kidney will come fully into view; the fascia surrounding it being laid open, the finger can be passed inward, so as to touch the hilus of the kidney and feel the commencement of the ureter and pelvis. In this operation one or two lumbar intercostal arteries will be met with, and would require division and ligature; the ileo-lumbar nerve might also be cut."

The operation which I performed was substantially the same. The patient was placed on her right side, and an incision made from the last rib to the crest of the ilium, on a line with and hugging closely the erector spinæ. The fascia of the transversalis was reached at the depth of about one inch; upon dividing this, the peri-renal fat, which was abundant, was encountered. After incising this fat and excising a considerable portion of it, the dilated kidney with its ordinary color was, at a depth of more than two inches, brought into view. Percussion upon the anterior and most prominent part of the tumor revealed an indistinct fluctuation. The trocar was then introduced, and pus mixed with flakes of plastic matter was discharged. I then with a scalpel enlarged the opening made by the trocar, so as to admit the index-finger. The cavity, explored by pushing the hand well into the wound in the loin, was about three inches long by two inches in width. The calculus was situated on the internal wall at a point corresponding to the hilus of the kidney, and was embedded in partly-disorganized fibrine. *The kidney-tissue which I incised was about one-half inch in thickness, and bled but little.* A drain-tube was inserted; through and around this pus was discharged, but on the fourth day the wound assumed an unhealthy appearance, pyæmia intervened, and my patient died on the fifth day.

The immediate effects of the operation were of the most gratifying and hope-inspiring character; she passed from a condition of torture to one of comparative ease; the sense of tension and oppression, and the fearful pain in the left limb, disappeared completely.

The stone is extremely light, weighing only twenty grains and three-quarters. It is seven-eighths of an inch in length, by half an inch in breadth at its widest part, being reniform in shape. It is ammoniac magnesian phosphate.

HISTORY OF NEPHROTOMY, AND THE ESTIMATE PLACED UPON IT BY VARIOUS AUTHORS.

Mr. Thomas Smith says: "The operation of nephrotomy, though mentioned and recommended by Hippocrates with certain reservations, was by him and his followers restricted to cases in which there was an external swelling—cases in which, as they expressed it, Nature showed the way. This, one may suppose, would include cases of calculous impaction of the ureter or kidney, sufficient to cause an external swelling; it would also refer to renal abscess or renal fistula. *In this limited application the operation of nephrotomy has been but rarely performed, and I am not aware that in these operations the extraction of calculi has ever been methodically attempted;* although the details of a case (Marchette's) will presently be given where calculi were successfully removed from the kidney by the operation of nephrotomy."

That Mr. Smith had in view nephrotomy for a pyelitic kidney with a calculus, as well as for a calculus in the pelvis of the kidney without suppuration, may be inferred from the following, taken from his section on the *difficulties* of the operation: "Dilatation of the kidney or upper part of the ureter, from an impacted calculus, would greatly facilitate the operation; and, though in such a case it would be likely that the renal tissue would be seriously disorganized, still even then there would be more chance of a sound and efficient kidney on the opposite side, than in cases of long-standing vesical calculus where both kidneys are commonly disorganized." Farther on he says: "In a kidney much dilated, however, the amount of secreting structure to be cut through, to reach a stone, might be reduced to a very thin and but slightly-vascular layer."

In my case it will be remembered that the kidney-substance cut through was one-half inch in thickness. Rayer (Maladies des Reins), who cites numerous instances of abscess formations, with extraction of calculi, remarks: "Without doubt, in the most part of these cases the operation practised was not rigorously nephrotomy; in several, the calculus extracted at the moment of incision was situated in an extra-renal abscess, consecutive to a fistula of the kidney; and in other cases the extraction of the calculus was not made at the moment of the operation, the surgeon was content to penetrate the extra-renal abscess; he waited for the calculus to present spontaneously before making the extraction."

Hevin, Paris, 1770, upon the celebrated case of the Free Archer, quotes from the History of France, thus: "The Doctors of the Faculty of Medicine in Paris, having heard that an archer of Bagnolet, who had for a long time suffered with stone, was condemned to death for crime, petitioned the king and magistrate to let them attempt to extract the stone from his kidneys before death. The operation was practised with success, and the man lived several years in good health."

Velpeau discredits this operation of the Faculty of Paris, as follows: "Nor can the operation performed upon the Free Archer, which has been so much spoken of, be deemed any longer of any weight in a question of this kind. What confidence, in fact, can be accorded to this story, when we see that Mézeria makes this criminal come from Bagnolet, while Paré, who relates the circumstance from the chronicles of Monstrelet, makes him come from Meudon; when some authors state that he lived under Charles VII., and others under Louis XI., when Collot and the author of the History of France believed that nephrotomy was performed upon him, while Rousset and Sprengel supposed that he was cut for stone by the high operation; when Méry, on the contrary, considers that he was cured by the perineal operation, while Tollet asserts that the only operation performed upon him was merely gastrotomy for a volvulus?"

Chelius—edition by South, vol. iii., page 268—upon this subject, says: "The removal of the stone by cutting (nephrotomia) can only be undertaken when an œdematous or fluctuating swelling, or a fistula, has formed in the loins."

Sir Henry Thompson, in "Holmes's System of Surgery," vol. iv., page 333, on the subject of chronic pyelitis says: "Abscesses may be formed under these circumstances" (the presence of a stone), "as also the sequel of nephritis; they should not be opened until the tumor points and the diagnosis is clear."

Sir Astley Cooper, in his lectures on the "Principles and Practice of Surgery," vol. ii., page 168, says: "Nature sometimes succeeds in removing these extraneous bodies by a process of ulceration; an opening being formed in the loins, through which a stone can be felt by passing a probe, and by which the calculus is ultimately discharged. . . . A stone in the kidney, when very large, may in some instances be felt through the loins. Mr. Cline informed me that a patient consulted him who had this disease, in whom he could distinctly feel the stone by pressing on the loins; the patient's general health would not at that time bear an operation, otherwise Mr. Cline would have removed the stone by incision."

Gross, fifth edition, vol. ii., page 710—"When the stone is large and productive of incessant and severe suffering, nephrotomy has been recommended, but such a procedure could only be thought of when the concretion is of immense bulk, or when it has worked its way partially through the loin by ulceration."

Gant ("Principles and Practice of Surgery," page 1030), without recognizing nephrotomy, thus refers to renal calculi: "In rare cases, abscess has been known to ensue, and the stone discharged through an aperture in the loins."

In the article on "Nephrotomy," in Cooper's "Surgical Dictionary," occurs the following: "The operation of cutting a stone out of the kidney, a proceeding which, perhaps, has never been actually put into practice. . . . there is no doubt that stones have often been extracted from abscesses about the region of the kidneys after their presence has been deected with a probe."

Syme (page 390), upon the subject of pyelitic abscesses and the passage of calculi to the surface where they can be felt, says: "In some rare cases abscesses have been produced by the irritation of the kidney, and in others, still more rare, the matter, by inducing absorption of the parietes of the abdomen, has made a passage outward for the stone. Exaggerated reports of such occurrences have given rise to stories of renal calculi having been cut out, and nephrotomy has been seriously proposed by surgeons who think more of the execution than the consequences of operations."

Thomas Annandale, F. R. S. E., Assistant Surgeon to the Royal Infirmary, in vol. xv., 1869, *Edinburgh Medical Journal*, in giving the history of a case in which he had extracted a calculus through a renal fistula, makes the following remark upon the cases to which the term nephrotomy should be applied: "I have not called my case one of successful nephrotomy, although similar cases have been so named, for *I think this term ought to be confined to those cases in which the surgeon makes special incision down through the loins, and lays open the ureter or kidney.*" On its adaptation, he says: "The conditions of the kidney most likely to be favorable for the extraction of calculi are those in which the stone is encysted and superficial, or in which the glandular structure of the kidney has become destroyed or absorbed; but, even in the other conditions" (referring to Thomas Smith's suggestions), "the removal of a stone may, I think, be perfectly justifiable, especially if the patient's symptoms are severe or urgent."

To select still further from Mr. Annandale: "Hippocrates, quoted by Heister, says: 'Where there is a suppuration of the kidney, and it forms a tumor near the spine, in that case a deep incision is to be made upon the tumor near the kidney or into the kidney itself.' Lavaterus, quoted by the same author, says: 'I perform the operation of nephrotomy on either of the kidneys when Nature directs to that practice by forming an abscess.'"

Sir Benjamin Brodie, says: "But nephrotomy (as it is termed) may be practicable where Nature, by the formation of an abscess, has pointed out the exact situation of the calculi so that they may be felt with a probe."

Mr. Gregory Smith, at the London Pathological Society, in 1839, gave the history of a renal calculi removed by Mr. Brodie from "an abscess in the lumbar region, pointing, and about to burst;" previous to this he had written, as we learn from Charles Hawkins, in his collection of Sir Benjamin's "Works," vol. ii., page 572, as follows: "These extreme cases in which abscess of the kidney has no means of discharging its contents, and in consequence produces symptoms of general depression of the system with a weakened circulation, and a languor and listlessness of the mind, are, I fear, but little under the dominion of our art."

Upon nephrotomy, Velpeau writes: "Science possesses numerous instances of calculi which, after having become arrested in the *kidney itself*, have there acquired a considerable degree of development, in such a manner as to ultimately result in the death of the patient. Hence came the idea of nephrotomy, which may be described as an incision into the organ through the sound tissues, or the incision of a purulent collection over which we have been enabled to feel through the lumbar region; or it may consist also of a simple enlargement of a renal fistula with the view of favoring the escape or extraction of the foreign body. It cannot be denied that it would be possible to reach the kidney on its posterior side, between the last rib and the crest of the ilium on the one hand, and the sacro-lumbar mass and the posterior border of the oblique muscles on the other. I have many times laid it bare by following this process. Though it be next to impossible to satisfy ourselves by any physical means of the existence of stone in the kidney; though the reasonable signs of this should be deceptive; though, on the other hand, after the presence of the calculus is once established, it may still be required to know whether it occupies the entrance of the ureter or the pelvis rather than the tissues of one of the walls of the organ; whether it is or is not accompanied with ulcerations and purulent dissolution, or any disorganization whatever; finally, though we may be forced to renounce nephrotomy, so long as there is no point externally which indicates the locality upon which we should direct our researches, it is also certain that, since the labors of M. Rayer, the diagnosis of calculi in the kidney is no longer a matter of such difficulty, and that the presence of a tumor in the flank, with a prominence in one of the lumbar regions, together with the signs of calculous nephritis, would authorize additional essays in nephrotomy. There is, moreover, no proof that this operation has ever been attempted. The passage which is quoted from Hippocrates, in support of it, does not seem to have reference to it. . . . The case of the consul Hobson ('Transac. Phil., Abr.,' vol. iv., page 116), who is stated to have been operated upon by Marchetti, is hardly more conclusive. Bernard, who relates it, had no other proof of the fact than the assertion of the patient and his wife, while Marchetti himself, in his 'Observations Rares,' says not a word of it. It is to be hoped, therefore, that the discussions raised in the schools of surgery in 1754 by Masquelier and Borden, and by Cousinot a century before, to ascertain whether nephrotomy was or was not practicable, will not again be revived. The operation cannot, in reality, be proposed except in a small number of cases, as in those in which the flank, which has become the seat of an evident fluctuation, after the existence of various signs of calculous affections of the kidney, would enable us to reach the morbid collection with facility and certainty; or in those cases also in which a fistulous ulcer should have enabled us to come into immediate contact with the stone by means of an exploring instrument; or, finally, where the calculus itself projects at the exterior, and may be recognized through the integuments. In such cases, the operation is so simple and is reduced to so small a matter, and has, moreover, to be modified by so many controlling circumstances, that it would be useless to describe it in detail. All that can be said is this, that after having made openings of sufficient extent or enlarged those which already existed, by means of the bistoury alone, or by this instrument guided upon the director, we should search for the stone with caution, and, in order to displace and extract it, make use either of the ordinary forceps, the polypus-forceps, hooks, or scoops, or the dressing-forceps, or the fingers alone. Lafitte ('Mém. de l'Acad. Chir.,' tome xi., page 170, 1819) has very judiciously described the cases which may require this operation, and it might probably have been performed with advantage upon the patient mentioned by Billebant.('Acad. de Berlin,' tome iv., page 32): 'I have attempted it upon two calculous patients, and in both instances confined myself to the first stage, that is to say, that I stopped after making an opening into the vast lumbar abscess, and that the patients, then finding themselves relieved, would no longer listen to an operation.'"

Lizars, "Practical Surgery," page 377: "Sometimes the matter advances to the skin, forming a distinct fluctuating tumor, which should be excised; in this case the calculi can be detected by a probe and may be extracted with the forceps. The operation has been termed nephrotomy."

In Copeland's "Medical Dictionary" I find the following: "It is more probable that, in the successful cases"—referring to those instances in which abscesses had been opened by the knife or caustic—"of these operations on record, the calculi had passed by ulceration from the pelvis of the kidney into the cellular tissue external to it, and that they had been extracted from an extra-renal abscess formed by it."

Ashurst, "Principles and Practice of Surgery," p. 825, says: "Calculous concretions have been occasionally extracted from the kidney or ureter in cases in which the existence of an abscess or urinary fistula has served as an indication for the proceeding."

Benjamin Bell, "System of Surgery," vol. vi., p. 216: "When, indeed, the inflammation induced by a stone in the kidney terminates in an abscess, and when the matter thus collected forms a tumor in which a fluctuation is distinguished, little or no danger can ensue from laying it open. And, in such an event, the stone that produced the tumor will either be discharged along with the matter; or it may, if it can be laid hold of, be afterward taken out with safety."

Joseph Warren, F. R. S., "Cases in Surgery," London, 1784: "Sometimes the disease terminates in the death of the patient; at other times it has happened that a stone, from being immovably fixed in the pelvis of the kidneys, has produced an inflammation and enlargement of that body and its neighboring parts, which has at length ended in an abscess; and by bursting has formed an external opening, through which there have been occasional discharges of gravelly and stony particles. But if this tumor be opened by incision, and the stony particles be extracted by the surgeon, the operation is then called *nephrotomy;* which operation, notwithstanding whatever may have been said by Marchetti or others upon the subject, can only take place when thus circumstanced, and then the performance of the operation is not attended with any greater difficulty than the opening an abscess in any other part of the body."

This author did not seem to be aware that Marchetti had said nothing on the subject.

The history of the nephrotomy performed by Prof. Moses Gunn, of Chicago, is taken from the report of that distinguished surgeon to the Illinois State Medical Society in 1870.

"On the 16th day of April last," says Prof. Gunn, "I made an exploratory operation upon a patient of Prof. Allen, who for five months had suffered from symptoms which indicated the probable presence of a renal calculus. The operation was conducted upon the plan described above, and was performed in the presence and by the aid of Prof. Allen, Drs. Chesbrough, Parks, and Smith. . . . But little blood was lost, and the posterior surface of the kidney was readily reached, which position enabled us to make tactile examination of the pelvis and commencement of the ureter. But, like Mr. Durham, at Guy's, we were dsappointed in our expectations of finding a calculus. The organ seemed shrunken and soft, but was not interfered with, as the patient had enjoined upon us that in no event should the kidney be extirpated. A pledget of lint was laid on the bottom of the wound, and with three ligatures was brought out at its lower angle, the upper half being closed with three sutures. The operation was borne well, though the patient was greatly reduced, from his long and severe suffering. Like Mr. Durham's patient, ours too was greatly benefited by the incision; the nausea, which had been nearly continuous and extreme, was completely relieved, and the pain, which had been severe, wholly disappeared."

It is said, in a foot-note to this paper, as it is published in the September number of the *Chicago Medical Examiner*, that the improvement in this case was of six weeks' duration, after which time the old symptoms gradually reappeared.

While writing this paper, the November number of the NEW YORK MEDICAL JOURNAL arrived, containing an article entitled "A New Case of Extirpation of the Kidney, with Remarks, by George A. Peters, M. D., Surgeon to St. Luke's Hospital, and Surgeon to New York Hospital;" and, as the case is so *à propos*, I may be pardoned for quoting liberally from so recent an issue of this journal.

Dr. Peters thus describes his case: "There is a tumor occupying the region of the right kidney, supposed to be the kidney itself. It extends from about an inch below the free border of the ribs to the crest of the ilium, and reaches to within four inches of the median line in front, and downward to within an inch and a half of the anterior superior spine, with a transverse measurement of four inches. What appears to be the pelvis of the kidney is the seat of the principal enlargement, and at this point deep fluctuation is distinctly made out." Dr. Peters explored this tumor with the trocar of Dieulafoy's *aspirateur* No. 2, and drew from it about three ounces of pus. He then says: "From the symptoms, pain, purulent discharge, and previous traces of blood in the urine after exercise; from the condition of the kidney as appreciated by palpation and the additional evidences of stone which the exploration was thought to furnish; after due consultation, the diagnosis of calculous pyelitis was decided on, and the operation of nephrotomy, with possible extirpation of the kidney, depending on the amount of degeneration, was considered advisable."

Dr. Peters approached the kidney through the loin; made an incision into it, found no stone, but concluded: "Considering the evident uselessness of the kidney for any physiological purpose, and the damage it had already suffered in the search, it was thought best to remove it entirely"—a proceeding which will excite wonder. Patient died, sixty-five hours after the operation, "apparently of exhaustion, without any special symptom of uræmic poisoning."

From Dr. Peters's interesting paper I learn the subsequent history of Mr. Durham's nephrotomy-case; promised, but never given, I believe, in the *Medical Times and Gazette.* The facts are furnished by Dr. Charles McBurney, Jr., of New York City, who was present at the second operation. After describing the nephrotomy of February 3, 1870, given on pages 25 and 26, he says: "For some time after, the patient experienced some relief from the pain of which she had complained, but it soon recurred; was very much increased by pressure over the kidney, which could be distinctly felt beneath the cicatrix of the wound, and in May, 1872, it was decided to repeat the operation and remove the kidney.

"An incision was made in the line of the previous one, the kidney turned out and removed, the artery, vein, and ureter, having been first included in one strong ligature. *The kidney was found on incision to be perfectly healthy.*" The patient died, it is said, within the week, and "the *post mortem* failed to reveal any cause of death."

This case of Mr. Durham's was certainly a very remarkable one; and the fact that he performed nephrotomy and extirpation upon a healthy kidney invests it with peculiar interest.

It will thus be seen that all the authors which I have quoted, ancient and modern, up to the appearance, in 1869, of Thomas Smith's essay on nephrotomy, confine the operation to *incising a fluctuating abscess and enlarging a renal fistula.* Some of them include concretions of immense bulk, that are working their way to the surface by ulceration. Marchetti's case, by most of them, is quoted only to be discredited. The plan of dissecting through the loin into a dilated or an undilated kidney, and doing this early, before the organ is destroyed and the life of the subject placed in great jeopardy, is not entertained by any of them.

DIAGNOSIS OF RENAL CALCULUS BY PHYSICAL MEANS.

This has always, from the deep, protected situation of the kidney, been regarded as next to impossible. The organ rests against and upon an almost immovable wall, composed of peri-renal fat, muscles, fascia, cellular tissue loaded with adipose matter, and the skin, a wall varying in thickness from two to four inches. In the front the kidney is obscured by the abdominal parietes, by the colon which crosses its long axis, by the liver on the right, and by the overhanging stomach and spleen on the left. Upon this subject Mr. Thomas Smith says: "For the physical examination of the kidney it is well that the bowels should be previously cleared by an aperient, and the patient should lie on his back, his knees being drawn up and supported in that position. The surgeon, placing the fingers of one hand on the lumbar region just below the last rib and outside the erector-spinæ muscle, may press the kidney gently forward from behind; while with the thumb of the same hand, or with the fingers of the opposite hand, he should press the hypochondriac region in front, as near the lower margin of the ribs as possible. This pressure should be gentle at first, but continuous and increasing, especially during expiration, and until the resistance is met with, and the outline recognized that characterizes the kidney. For appreciating irregularities of outline on the surface, or in the pelvis of the kidney, it is best to pass the fingers or thumb from above downward, over the front surface of the organ. This examination may be made in most instances without the aid of chloroform; while, in others, chloroform is advisable to relax the abdominal muscles, and overcome the turbulence of the patient."

It is only, as Mr. Smith suggests, in children and very lean persons, that we will be enabled by this plan to determine the condition of the kidney.

The lesson of this matter is of value: it teaches that calculus, without suppuration, in the pelvis of the kidney may be removed, and removed safely and successfully in all probability, by the method of Mr. Thomas Smith, to whom the profession must ever be under great obligations for his important contribution to surgical resources. It also teaches —what is of more practical importance—that a pyelitic abscess should be attacked through the loins, and attacked early, before the kidney is lost by destructive inflammation. There are few surgeons who have not seen persons die from unrelieved pyelitis. If the operator waits, as is recommended by all who have written upon the subject, for pointing, his patient is generally lost before that event occurs; this accounts for the small number of renal abscesses which have been incised, to be found in surgical literature. The early operation through the loin has a twofold object—to remove the foreign body, and to establish a drain for the diseased kidney.

Art. IV.—*The Natural Cure of Disease. Synopsis of a Lecture delivered in Course before an Association of Physicians of Brooklyn, N. Y.* By Prof. Samuel G. Armor, M. D., of the Long Island College Hospital.

The study of therapeutics, as we shall see, is beset with many difficulties, none of which are more prominent than our want of knowledge of the natural history of disease. The bearing of this upon our therapeutic reasonings must be at once apparent. Usually we see but one side of the question, and find it difficult, therefore, to form a proper estimate of what belongs to *Nature* and what to *Art*. Drugs are administered, patients recover, and we suppose we have cured them; whereas our remedies may have had little or nothing to do with the recovery; very likely it took place in spite of our drugs.

This mistake of sequence for a consequence appears to be one of the most natural to which the human mind is liable. We encounter it in every department of physical science, and in none, perhaps, more than in estimating the curative value of drugs. Many reasons might be assigned why this is so, one or two of which I may mention. In the first place, we have no distinct instruction in the natural history of disease—I mean uninfluenced by drugs—nor have we any field for observation. Call to mind, if you can, a single instance in which you watched the course, progress, and termination of disease uninfluenced by remedies of some kind.

And we have not only no field for observation, but we find it difficult to create one. The natural instinct to seek relief from suffering and danger prompts all ranks and grades of people to put themselves under some sort of treatment. Moreover, physicians, from prejudices of education, as well as from conscientious convictions of duty, rarely omit the ordinary remedies in severe disease.

Just here, then, is a defect in our therapeutic literature which we find it difficult to correct. Our libraries are full of books on therapeutics proper, but contain few on Nature's power of curing disease. And yet there would seem to be no good reason why, if Nature has the power of creating disease, she may not have the power of curing the same, and that she has such power there can be no doubt.

You will find an admirable summary of our knowledge on this subject, limited as it necessarily is, by Sir John Forbes, of London, for many years the renowned editor of the *British and Foreign Medical Review:* I refer to the last professional work of his life, published in 1857, entitled "Nature and Art in the Cure of Diseases," a work to which I acknowledge myself indebted for many of the thoughts and suggestions of the present lecture. His evidence in favor of Nature's power of curing disease is mainly drawn from—

1. The great field presented by the pathology and diseases of inferior animals. Wounds of the most desperate kinds have been repaired in them by the natural process; and of most varied forms of disease a very large percentage are restored to health by the natural process alone.

2. The history of savage or uncivilized nations. Many diseases are untreated, and others are treated by superstitious charms.

3. The history of isolated individuals, or isolated bodies of men of greater or less extent, who have been attacked by sickness under circumstances in which no medical aid and no medical appliances were procurable. It cannot, of course, be denied that many die under such circumstances that might have been saved; but still a large proportion of cases of sickness recover with little or no medical treatment.

4. The varied systems and modes of practice, such as "Expectation," "Homœopathy," "Grape-Cure," "Whey-Cure," etc., etc.

Under all these varied systems, what is the result? Doubtless, as in the former case, many die that might otherwise been saved. And yet many recover.

This is the general line of argument so ably presented in the work to which I refer. It is extremely suggestive, and no one, I am quite sure, can carefully analyze the facts presented without being led to the conviction that the power of Nature to cure disease is infinitely greater than is generally believed by the great body of practitioners, as well as by the public generally. And yet the medical *art* has a noble part to play as a "hand-maid and helper of Nature"—for this is its true position. It is an old aphorism that "physicians cure—i. e., 'take care of'—but Nature heals." In visible diseases, surgical so called, nobody doubts that this is the case. The surgeon does not cure the fracture, the wound, or the ulcer: he merely guides the operations of Nature, removes obstacles, and the vital power restores to health.

And the same principle, precisely, holds good in internal diseases, the relations of which are simply hidden from our senses.

What, then, does Art do toward curing? Art only assists Nature in restoring the vital forces to their normal action. We used to bleed in inflammations, and were under the impression, at the time, that we cured by that process. And possibly we did. But the merit, if any, was that we removed impediments, lessened the fulness of blood-vessels, relieved congestion, restored functional activity, and thereby enabled Nature to accomplish that internal healing process which must always take place when our treatment is successful.

In conditions of anæmia we administer iron and bitter tonics, and thereby restore to the blood its two great physiological properties of nutrition and stimulation. By curing the anæmia, we benefit and cure other disorders of which the anæmia is apt to be a symptom.

In the adynamic nervous state, we support the powers of the system by diffusible alcoholic stimulants, and believe that we thereby make a cure; but all we can claim is that we temporarily restore the exhausted and depressed nerve-power, establish a "proper balance" between the nervous and sanguiferous systems, while tonics, nutrients, and other restorative agents, effect the ultimate cure.

Even the doctrine of so-called *Specifics* must rest on the principle of natural cure. You will find, in Hufeland's introduction to his "Practice," an excellent article covering this whole subject of specific cure. I trust you will read it; for I have not time to present its many excellent points. In discussing the great doctrine of *Crisis*, which has been handed down to us from the remotest antiquity, with "sublime and mysterious significance," he clearly shows that "the cure does not consist in the critical evacuation—not in the external change: it consists in the internal healing process—the disease internally operated upon: it is the work of the internal vital power which assimilates, secretes, metamorphoses, and creates anew, that alone lies at the bottom of those external appearances."

This is a wonderfully clear statement of the whole doctrine of "critical discharges," and of what Hufeland calls "*Natural Cure.*" And yet it is in sharp contrast with much of our modern therapeutic teachings. In all cases of so-called "critical discharge," or spontaneous cure, he most properly, I think, adheres to the view that the evacuation, or increased secretion, should be looked upon as a *result* rather than a cause: "It is a manifestation, external and visible, of an unseen vital, curative power." If such were not the case, we might at all times rely upon artificial agents, especially eliminative medicines, to produce a condition of "crisis" in general febrile affections.

Now, practically considered, what do we learn from this whole subject? Mainly that there are two errors which the physician should carefully avoid.

The *first* is in *doing too little*—the negative treatment which leaves all to Nature, the physician's study being a mere "meditation on death." This is a fault which cannot be too strongly condemned, in view of the rich and well-established resources of our modern *materia medica*—for such treatment may be followed by the most fatal consequences, when there is really something positive to be done. When there are clear indications to act, I trust you will act intelligently, promptly, and, if necessary, heroically.

The *second* error is that of *doing too much*—the frequent resort to heroic, violent, depressing, and uncertain drugs. Of the two errors this is undoubtedly the greater. It cannot be too often repeated that powerfully-acting drugs, *unintelligently* *administered*, are dangerous things. I trust that I shall not offend the sensibilities of any gentleman present by expressing my preference for "sugar-of-milk" and good nursing to such practice.

But it is simply my purpose, at present, to guard against the two extremes mentioned. In the progress of opinion we may be passing from one extreme to another. In the recent past, cures were attributed alone to drugs. It was an age of faith in medicine; the recuperative power of Nature in the cure of disease was entirely denied. Cullen did much in his day toward establishing this heresy. It is said of him that he used at one time, in his lecture-room, this strange language in relation to Nature's curative efforts: "As for Nature, I would treat it in the sick-chamber as I would a squalling cat—open the door and drive it out."

It is a sad commentary on human reason that this great teacher and writer of his time was himself confused by those "false facts," which he was wont to declare were more numerous even than false theories.

These introductory remarks are, of course, addressed mainly to the younger members of the profession present. I have tried to inspire you with a reasonable confidence in the curative powers of Nature, to keep you from *over-drugging your patients.* I know how anxious you will be about those who are placed under your professional care, and how you will be tempted, in your over-anxiety, to do too much.

It is an error very liable to beset the young practitioner, to try to meet every different symptom by the addition of another drug to his formulæ. This is sure to lead to excessive medication. Let me guard you against becoming "shot-gun practitioners," on the principle that, if you fire a profusion of shot, it is extraordinary if some do not hit the mark! Quantity and complexity of prescription are very apt to be in proportion to the obscurity of the case. The strong and successful practitioner is usually a man of few remedies.

There are two rules of practice, just in this connection, that I would like to state with emphasis:

1. *Never administer a drug of any potency without a definite purpose—that is, without a clear indication—for drugs never occupy neutral ground.*

2. *Never use more medicine than is requisite to produce the effect which is intended, and continue it no longer than is absolutely necessary.*

These rules, faithfully adhered to, cannot fail to lessen the amount of drugs usually administered. It is a wise and true saying, that "it often happens to a *good* physician to find no indications for treatment; to *bad* ones, never."

Now, in conclusion, let me urge you to estimate the value of *time* in the cure of disease. Time is often just the remedy we need: it is a great "alterative" for the better in a host of maladies. Watson said that "six weeks" was his cure for rheumatism. Let me add that it is a valuable remedy for more diseases than rheumatism. But how shall we get these "six weeks," or "six days," as the case may be? How shall we bridge them over, when we know, from the nature of the difficulty, that we cannot hasten the recovery, or make it more sure, by drugs? Nay, more, when our deliberate judgment, perhaps, is that the patient will be better off without drugs? Shall we frankly say to the sick one that he needs time and patience and good nursing rather than drugs? Just here the skill, tact, judgment, and good sense of the physician are severely tested. I wish I could unqualifiedly answer the question in the affirmative—for it would be honest to do so—but, with the popular notions of disease and cure, I cannot. Sick people, as a rule, want medicine of some kind; they will have it; and, if you do not do something for them, they will be apt to discharge you, and send for one who has more faith in drugs, and fare worse.

But, in reply to this, it may be said that the profession should be the *educators* of the public in such matters; that they should break down this popular resource of quackery. To this I most heartily assent, so far as can be done with safety to the patient. But can it be? This must be a matter of judgment in each individual case. You must diagnosticate your *patient* as well as the disease. If your family is intelligent, and, above all, if your patient has implicit confidence in you, you may be able to say to him: "You do not need any medicine to-day; when you need it I shall prescribe for you."

To some minds the moral effect of such a speech would be good; to others quite the reverse. And the latter class are, I am inclined to think, altogether the more numerous.

Let us return, then, to the question, What shall we do in such cases? Sick people are anxious, restless, and often impatient. They study every look and word and suggestion of the physician. Shall we commence to educate such persons *in the sick-chamber?* The experiment would certainly be hazardous in most cases. Say to a nervous and morbidly foreboding patient, who looks to you for relief, "I shall not prescribe any *medicine* for you to-day," and ten to one he will turn the matter over in his mind, after you leave, in this wise: "Well, what does this mean? Am I sicker than I think? Is there something obscure about the nature of the difficulty—something the doctor does not understand—and is he, therefore, undecided about the treatment? Or, what is worse, is the disease of such a nature that medicines will not reach it? Am I beyond recovery?"

I tell you, gentlemen, that man or woman, strong-minded as he or she may be, would sleep better with a *placebo* confidently administered. We must do something; the *moral effect* is good, and, through that, the physical condition is often absolutely improved. This, and this only, is our justification.

I am sorry to present you this weak side of human nature; but it is true, and we may as well accept the facts.

My advice to you, then, is, to study the art of administering *placebos*, when they alone are indicated; and, when you do so, by all means see to it that your medicine is not hard to take, and that the patient is never woke up out of a good, refreshing sleep to take it.

And always—let me once more insist as a sound rule of practice—*when you have doubts as to your knowledge of the case, or doubts as between Nature and drugs, resolve that doubt, for the time being, in favor of Nature.* And, whether administering drugs or not, see that your patient is put on the best possible *hygiene;* that his room is airy and well lighted; that his drinks are suitable; that his food is adapted to his case; that he is bathed and sponged if too hot, and warmed if too cold; and, above all, that his mind and nervous system are kept as quiet as possible.

We should enforce a rigid hygiene in obedience to a most conservative and safe rule of practice, namely, *that it is the duty of the physician to restore health by the simplest means in his power.*

In presenting you, gentlemen, at this our first meeting, some thoughts on the Natural Cure of Disease, I have not sought to make you medical skeptics, but medical philosophers. Trousseau, the great clinical teacher of France, has well said that "*to know the nature and cause of disease is more than half of medicine.*"

And let me add, from another stand-point of medicine, that *to know the natural cure of disease is more than half of therapeutics.*

For this reason, I have sought to make this subject fundamental to the consideration of therapeutics proper, which we shall take up at our next lecture.

ART. V.—*A Case of Sub-luxation of the Atlas and Axis, with Absorption of the Intervertebral Pads between the Third and Fourth Cervical Vertebræ on One Side, and Paralysis of the Left Arm; with Remarks upon the Pathology and Treatment of Torticollis, etc.*[1] By MONTEFIORE J. MOSES, M. D.

IT is seldom that a surgeon is called upon to afford relief to a case of the kind I have the honor to submit, and, as it is one of a class which has nearly always proved fatal, I may be permitted to dwell carefully, and even minutely, upon such points as must be interesting to the profession generally, but more especially to those whose large surgical practice would bring cases of this kind before them, and to those who have endeavored to study the symptoms of odontoid fracture.

In looking over authorities I can find no record of a similar case, and therefore, unless some gentleman present can recall an instance, where, in his reading or experience, some parallel case may have occurred, I must consider the deformity, and the means employed to correct it, unique in many points.

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[1] Read before the New York Journal Library Association.

Before entering upon the details of this paper, I desire to state that the case became mine through the kindness and courtesy of Prof. Lewis A. Sayre, who, having been consulted in the matter on the eve of his departure for Europe, referred the parties to me.

N. S., a native of Savannah, Georgia, aged ten years, a child of delicate nervous organization, while playing with some other children, received a blow upon the left side of the head, from a piece of timber, causing a simple incised wound, an inch long, on the parietal bone, about half an inch above the temporo-parietal suture, and parallel to that line. The cut bled profusely, but caused the child no inconvenience at the time, save the trouble of arresting hæmorrhage, and cleansing the wound. There was no insensibility or headache, and, the hair having been trimmed off, and the place temporarily dressed, the child paid no more attention to it.

About three or four days afterward the wound looked angry and red, and the child had intense headache and high fever. General adenitis of that side of the neck set in, involving the superficial and deep cervical glands, and contractions began to be noticed in the fasciæ, drawing the head to the affected side, and causing obstinate and painful stiff neck.

After the acute adenitis had subsided, the rigidity remained persistent, the trouble being evidently progressive, as the head tilted more and more each day.

The wound remained open, irritable, red, and puffy, showing no disposition to heal. The physicians in attendance used lead-lotions, and finally cauterized the surface, till cicatrization was accomplished, the scar being exquisitely sensitive to the *slightest* touch.

Six weeks had now been consumed, when a tumor was noticed to the *right* side of the second cervical vertebra, which, being mistaken for an abscess, was poulticed, leeched, fomented, and rubbed with croton-oil. Still the deformity increased, until the chin was rotated to the right shoulder. The child's general health became impaired, and the little fellow was taken to the Sulphur Springs, in Florida, to recuperate.

In consequence of the great distortion of the neck, and the tense and unyielding contraction of the muscular sheaths, the head was fixed, not the least motion being possible by voluntary effort, in any direction; therefore, in endeavoring to approach an object, he twisted his trunk upon the pelvis, which gave him a sideling and unsteady gait.

About four months and a half after the receipt of the injury, a gradual paralysis of the left arm came on; the paralysis in a very short time being almost complete, though the flexors yielded more reluctantly than the other muscles.

This was his condition when he arrived in New York, his mother having brought him to have an operation performed for torticollis.

When I first saw the child, I expressed no positive opinion, but, upon the case being intrusted to my care, I made a thorough examination, which revealed the following condition:

I.—SITE OF WOUND.

Cicatrix irregular, very vascular and sensitive. The most accidental, trivial touch, even the pressure of his hat, eliciting violent expression of pain.

II.—POSITION OF THE HEAD.

Viewed from behind, the left ear approached the plane of the shoulders two inches nearer than the opposite side, so that a line drawn from the *top* of the *left* would have fallen under the *bottom* of the *right* ear. From the front, the head appeared bent slightly forward, and completely rotated, the body of the lower jaw being parallel with the clavicles. A line passing through both pupils formed an angle of 45° to a plane.

III.—CONDITION OF SUPERFICIAL MUSCLES.

When the head is manipulated, the fibres of the muscles on both sides act in concert, though the sterno-cleido-mastoid, on the left, seems flattened out.

IV.—CONDITION OF DEEP MUSCLES.

The amount of contraction in the deep muscles cannot be accurately ascertained, because of the tense condition of the fibrous fasciæ, of the trapezius, and sterno-cleido-mastoid.

V.—EXAMINATION OF TUMOR.

This tumor proved to be the transverse process of the atlas, and the spinous process of the axis, these bones maintaining almost naturally their relative positions in rotation, and both sub-luxated on the right side.

VI.—CONDITION OF SPINAL COLUMN.

There was a slight compensating curve, convexity to the *left*, beginning at the fifth cervical, with the greatest convexity at the fifth dorsal vertebra. There was also a slight curve, convexity to the *right*, in the lumbar region, though not very well marked.

VII.—NERVOUS SYMPTOMS.

Complete motor paralysis of the left arm and hand, with diminished sensibility to touch, and marked loss of temperature; tingling sensation in the thumb and forefinger and inner half of the middle finger; occasional twitching of the left leg after walking or lying down too long in one position; a slight spasmodic cough, which only annoyed him after emotional excitement.

VIII.—CONSTITUTIONAL HABIT AND TEMPERAMENT.

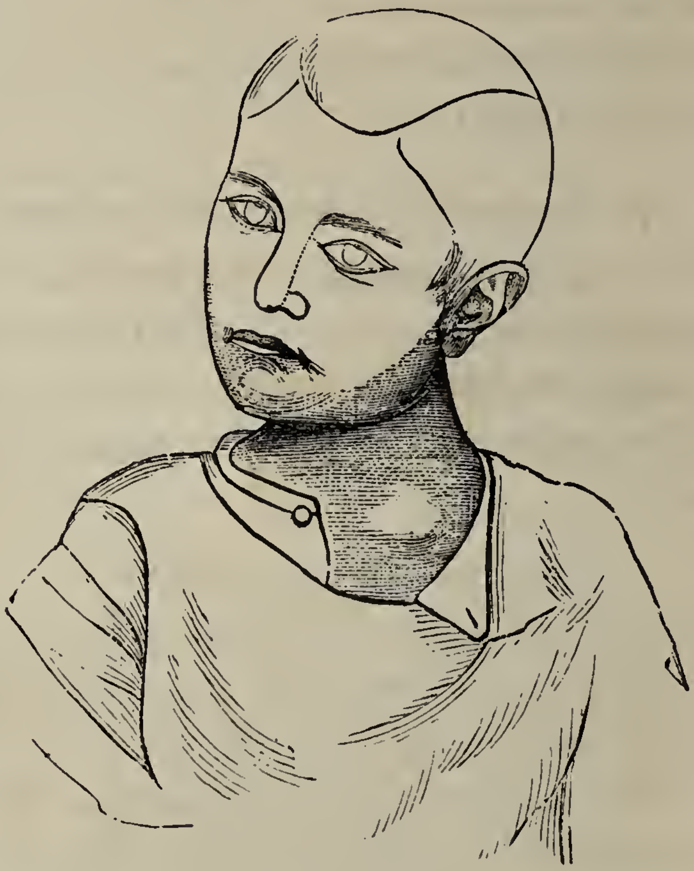
Nervo-bilious temperament, with loose, flabby muscular fibre. Somewhat anæmic, and vitality reduced from long confinement, and inability to take requisite exercise. Had no hereditary tendency to struma.

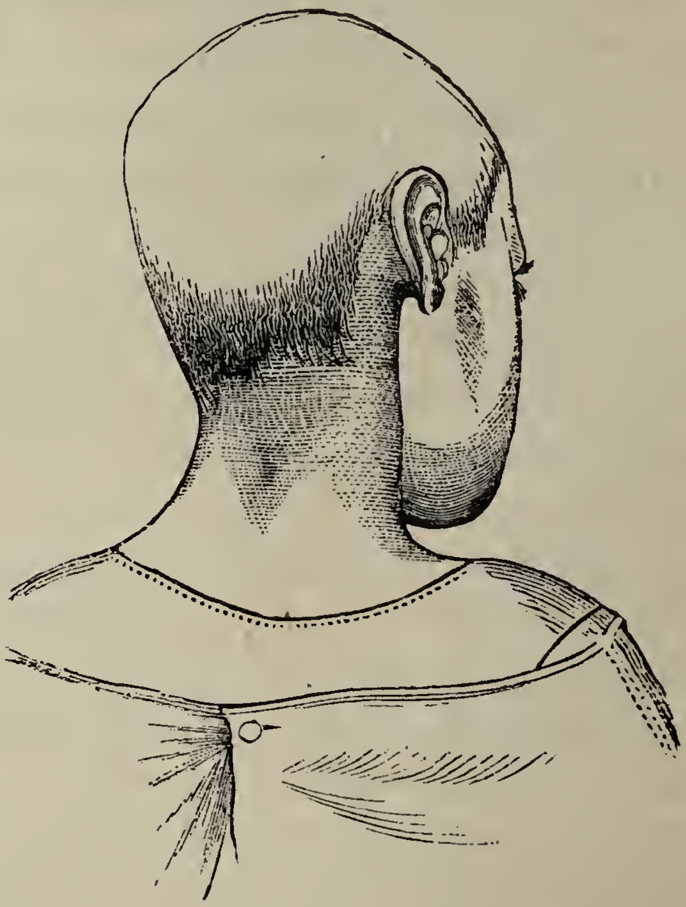
Diagnosis.—A sub-luxation of the first two cervical vertebræ, with absorption of the intervertebral pads, following active inflammation of the muscular and fibrous tissues of the neck, resulting in progressive contractions.

Treatment.—Mechanical. Elevation and counter-rotation, pressure being employed to push back the displaced bones, and holding them *in situ* till restitution of the intervertebral pads or deposit of bone occurred.

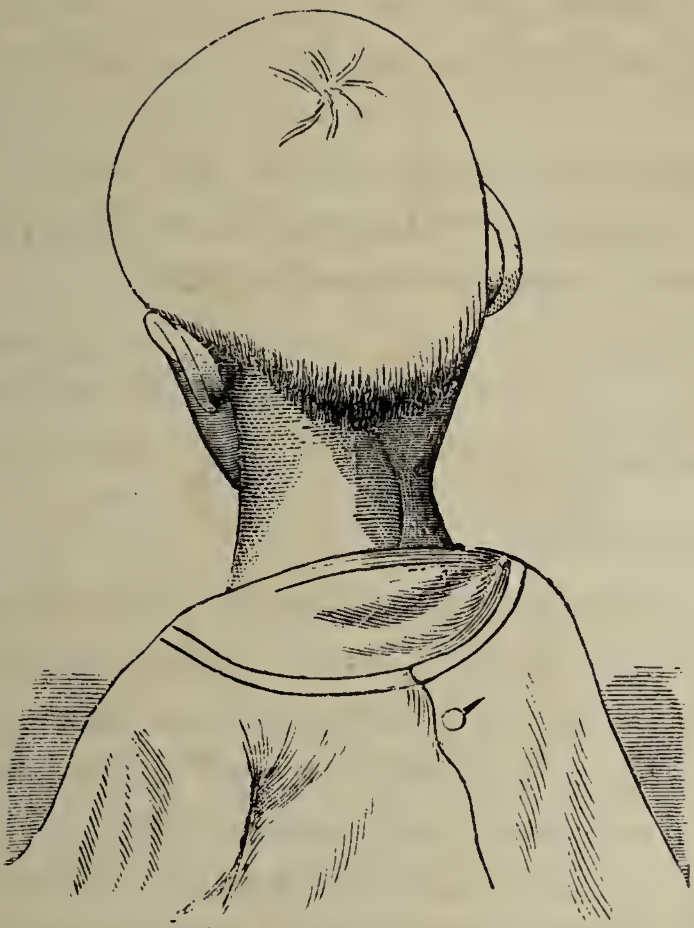
Prognosis.—Although, as may be seen, by examining the *cartes de visites*, the result was success, yet at no time in the first few weeks was the prognosis any thing but unfavorable, and not until the apparatus was removed was this opinion changed.

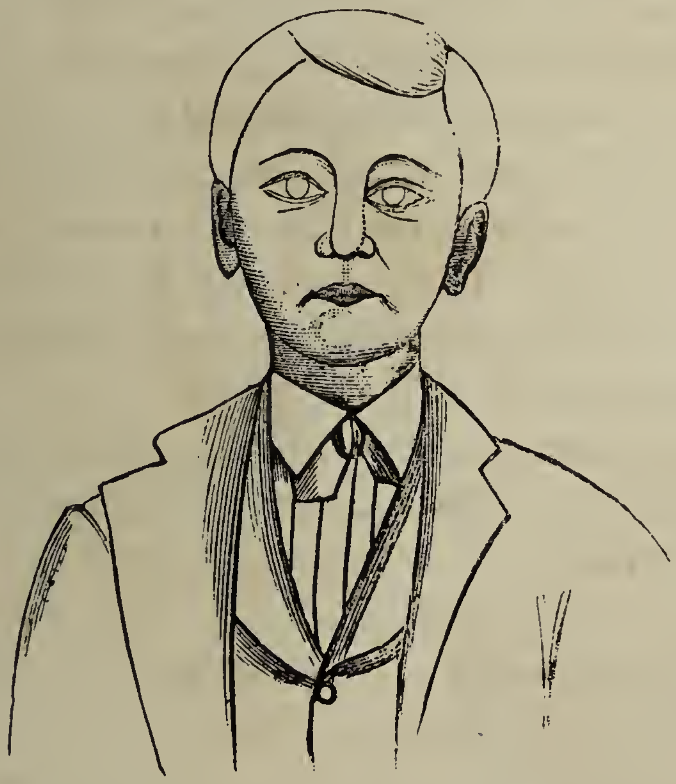
Before explaining my first attempt to adapt an instrument to the child's neck, it will not be amiss to call over the pathological condition developed by the examination, and the anatomical lesions which had occurred to superinduce the deformity; and, while examining the morbid anatomy, we will be justified in recalling the normal anatomy, so very rarely implicated in surgical lesion.





Besides the sterno-cleido-mastoid there are the trapezius, scaleni, complexius, the splenius capitis, longus colli recti, posticus anticus and lateralis, the inferior and superior oblique, which may be involved in the contractions constituting torticollis; and I think that a study of the physiology of the smaller muscles will frequently influence us in avoiding the knife, and direct our treatment elsewhere than to the





remedying contraction of the sterno-cleido-mastoid, which is often, as this case proves, a consequence and not a cause of deformity. I herein include my chain of evidences inducing my diagnosis, and influencing the construction of suitable apparatus.

An inflammation occurring in the neck on one side, resulting in contraction of the whole or part of the following muscles or their respective sheaths, viz.:

BEHIND.	IN FRONT.
Trapezius.	Rectus cap. ant. maj.
Splenius capitis.	“ “ “ min.
Rectus post. cap. maj.	“ “ “ lateralis.
“ “ “ min.	
Oblique, sup. and inf.	

would tend to draw down the head on the affected side; and this pathological condition would result in a physiological acquiescence and concert of action in the sterno-cleido-mastoid of the same side, and probably some little assistance would be derived from the scaleni and longus colli.

The muscles mentioned as being involved in a tonic state of contraction from inflammation would compel the muscles on the opposite side to suffer loss of tone from the increased and persistent antagonism. Under these circumstances the following deformity might be expected:

1. Rotation of the chin to the *sound* side.
2. An inclination of the head to the *affected* side.
3. More or less anterior flexion of the neck.
4. The mastoid process of the injured side would be drawn *downward* and *inward*, to the transverse processes of the *atlas*, and the weight of the head unpoised would rest on *one* edge of the intervertebral cushions, and absorption of this soft substance would result.
5. Corresponding to the loss of substance and the approach of the mastoid process and atlas on the *affected* side would be an actual increase of distance between these points on the *sound* side.
6. In a young subject, the absorption of tissue, from reasons mentioned, would render the disease progressive until compensation curvatures had been effected and equilibrium had been reëstablished.

In this case all the above-mentioned conditions held, except that loss of tissue had been so rapid that the mastoid process and the transverse of the fourth cervical approached, and the atlas and axis had been slipped to the other side, just like a melon-seed from between the fingers. The axis and atlas could be distinctly felt, the spinous process of the former bone being slightly rotated. The pad between the third and fourth vertebræ was fast giving way, and the nerves going to form the trachial plexus had been impinged upon, until the nerve-current had been arrested, and paralysis had resulted. The opinion as to the cause of the paralysis was verified by raising the head by my hand from its lateral inclination, when the biceps, coraco-brachialis, deltoid, and pronator muscles, gave immediate though weak response to voluntary effort.

Having applied every criticism to test the diagnosis I had made, and seeing no reason to change it, I then devised the following instrument, hoping by its use to overcome the contractions of the muscles and sheaths, to give room for the return of the displaced bones, and trusting to Nature to restore the soft cushion, or replace it by bony deposit.

The principle of the apparatus was as follows:

Making the shoulders fixed points by means of tempered steel saddles attached to a snugly-fitted double spinal brace, and a head-ring of similar metal, made somewhat like Taylor's, with the addition of a padded flange at each mastoid process, I placed a jack-screw on each shoulder-plate, extending it to the mastoid flange on the same side. The head-piece was connected to the spinal brace by ball-and-socket joint. This joint controlled, so as only to permit rotation. Now, as I elongated the screw on the affected side, making extension at the mastoid process with the padded flange, the head being fixed on the opposite side by the other adjusted screw, elevation of the depressed side was the only motion possible. The chin was supported by a chamois chin-piece attached to the steel ring, in the centre of which was a button for an elastic band, tending to rotate the chin toward the median line.

The instrument was put on and worked charmingly; but, after the lapse of ten or twelve days, it was removed, to save a terrible slough caused by pressure (even with a down pad) on the mastoid process. Two very ugly and indolent sores did appear where the pads had rested, and this misfortune assured me that, though I had the principle, the performance of my object would be difficult on account of the inability of the skin to stand the necessary pressure.

This unfortunate complication induced me to devise the instrument which finally cured the case; the picture which you see, of course, representing a reversed image.

Having seen the great service of water and air beds in paralysis and tedious and prolonged illness, and recollecting how air-pessaries are worn for a long time with no injury to the soft parts, though having bony points of pressure, I determined upon replacing the principle of the jack-screw by pneumatic or hydrostatic power. I constructed an instrument which held the head fixed when I had succeeded in placing it nearly straight by careful and prolonged manipulation. By making pressure against the left mastoid process, met by counter-pressure on the angle formed by the displaced bones by means of India-rubber air-pessaries, I succeeded in putting the head almost perfectly straight, and held it as softly as only an air or water pad could.

One point had been gained by the first apparatus—that is, the child had regained some voluntary motion, all but rotation, and in consequence of this fact I had been enabled to straighten the head with my hand without employing more than a moderate force.

I had many misfortunes while attempting to manufacture an apparatus. Tiemann failed to make what I wanted; but finally Darrow & Co. succeeded in making just what I needed, from a model I cut myself from pasteboard.

Before putting on my apparatus, I determined to open the old wound, to find if an included nerve-fibre was not the cause of his exquisite sensitiveness to touch, and probably the starting-point of the whole trouble.

I included the whole cicatrix in an elliptical incision, removing it thoroughly, and closed *my* incision by seven silver sutures.

I found the included nerve-filament, and about ten or fifteen short, detached pieces of hair, about half a line in length, which probably had been left there when the hair was cut at the time of the accident, and been covered over by the cicatrix.

The incisions I made healed by first intention, and I need hardly say his neuralgia was gone.

When the instrument was placed upon the patient and every thing adjusted, the deformity was almost entirely remedied. The eyes, which had previously showed a variation of 45°, now showed scarcely 5°; and the "tumor," which before presented quite an angle, was almost obliterated, the soft air-pessary constantly pressing the displaced bones back into position.

The child suffered no pain or inconvenience, and I had every reason now to expect a satisfactory result if Nature succeeded in carrying out the reparative process. A little oversight here almost involved failure. We employed the common air-pessary, with a hole in the centre, and the part over which the hole rested bulged up and threatened serious consequences. A small slough did occur, but, by constantly shifting the point of pressure by readjusting the pessaries every few hours, and finally by substituting air-bags without holes, we were saved from the necessity of removing the apparatus.

When the instrument had been worn twenty-three days, it was removed to be cleaned, and the head was found to be almost straight, could be supported *in situ* with very little assistance, and showed no disposition to return.

I now determined to place the child upon an inclined plane, but replaced the apparatus temporarily, until a plane such as I wanted could be constructed.

While awaiting the completion of the inclined plane (also manufactured by Messrs. Darrow & Co.), an accident occurred which retarded the final recovery, and which for many days threatened the life of the poor little boy.

Having been left alone in a room, seated in an easy-chair, and, desiring to get a book from the table, he made an effort to rise without assistance. To effect this, he placed his right hand upon the left knee, and, losing his balance, he twisted completely around, and fell heavily upon his back, jarring his head and back terribly. On the return of his family, they found him lying as described. Had there been no instrument on, this shock would doubtless have killed him; as it was, I watched him through that day and the next, expecting death at any moment. Death did not come, but a general paralysis, beginning in the sound arm and finally extending to both legs, came on, and five days after, when the instrument was removed and he was placed upon the inclined plane, though the deformity was much better, the patient was quite helpless. I had the child now put upon highly-nutritious diet, and gave him wine and the lacto-phosphate of lime and iron. I applied faradization to the muscles as a general tonic, and I noticed visible improvement and response. At this time spasms, resembling the diplegic convulsion, produced by galvanism of the cervical plexus of the sympathetic, developed themselves, and I was led by this occurrence to attribute the paralysis to general nervous shock, and not to any special lesion. At first the spasms were confined to the legs, but now they extended to the arms, hands, and face, always giving him premonition.

The mother of the boy being now obliged to return home to the care of a young and numerous family, I dared not counsel a separation. The consequent treatment would be almost entirely attentative, and the change of air and the genial weather of a Savannah winter would tend more to restore him than close confinement in a house in our colder climate.

I therefore recommended that the boy be taken home; allowed to lie as much as possible, in pleasant weather, in the sunlight and air; fed upon the most nutritious diet; and that galvanism of the cervical ganglia be practised by the regular family practitioner, whose unfortunate illness, at the time the boy was hurt, deprived the family of his skilful services. I also counselled moderate but persistent faradization of the muscles, which had suffered atrophy from inertia. The child arrived by steamer at Savannah, having worn the apparatus on the trip. Improvement began and steadily progressed from the day of his return. First his hands, and finally the feet and limbs, regained their lost power, and, though timid in regard to making too much effort, yet three months after leaving New York he could stand alone. Two months more find him sitting at table and assisting himself; another month, and he is walking carefully from room to room; and three months ago I received a visit from his father, who says his boy is *well.* I present for inspection the photographs of what was and what is.

I am convinced, from careful study of this case, that the pathology of torticollis is a little crude. The disease is sometimes, probably, dependent upon some lesion of the spinal accessory[1] nerve, and the contractions of the sterno-cleido-mastoid and trapezius fibres are looked upon as the origin of the deformity, while, in fact, they are more than likely the last parts implicated. If you press your own head to one side and endeavor to resist, the sterno-cleido immediately contracts spasmodically, and the chin rotates. The sterno-cleido-mastoid and trapezius contract, and this contraction becomes more marked as the head tilts toward them, and in the same manner as the sheaths of the muscles accommodate themselves by actual shortening to the diminished length of the muscles they cover, so by degrees the physiological accommodation of these muscles becomes a pathological condition. In my opinion, the oblique and recti muscles are the organs at fault, and this, I think, will be verified, if any one will recall the loss of motion involved by an ordinary crick in the neck, which nearly every one has suffered from at some period of his life.

With thoroughly-adapted instruments, and air-pressure, I think also that the knife need but rarely be called into requisition. In the case just recorded, I was enabled to maintain a pressure of many pounds, sufficient, in fact, to retain in position the head, which I think required about twenty pounds of pressure to replace. I doubt not that, with the power gained by leverage in the flanges, and an air-bag of sufficient thickness, I could straighten in a short while the most rigid muscles, and, by gradually-increasing pressure, force the stoutest fascia to yield.

I had in the case I treated an assistant which many will miss—in the patient himself. The little fellow had the most indomitable will and courage, and perfect reliance upon his power to stand up under the treatment; he never flinched from undertaking any thing he was told to do, and was grateful for every effort in his behalf. His patience endeared him to me, and made my effort a labor of love.

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[1] In this instance, I believe, the inclusion of the conjoined filaments of the occipitalis major and minor, as these were about the seat of lesion of the scalp, and as the two nerves supply the muscle I knew to be involved in contraction.

There were moments when pain and nervousness forced the child to tears, but after the storm came sunshine, and, by soothing and cheerful words, he would endeavor to encourage his mother, whose sympathy made her the greater sufferer of the two. Not only, then, do I cherish the recollections of this case as a good surgical result, but as the means of having saved, for future usefulness and a noble life, one whose patience in long-suffering augurs for him a great future.

Art. VI.—*Report of Cases of Strangulated Inguinal Hernia.*[1] By Hugh W. Brock, M. D., of Morgantown, West Virginia.

Case I.—John Snowden, farmer, aged forty, had been the subject of indirect inguinal hernia for ten years, for which he had worn a truss; but on the evening of 14th January, 1858, having removed his truss, and becoming enraged at seeing a number of cattle in his door-yard, ran violently after them, striking, while at full speed, his right groin immediately over the seat of his hernia, which was by this time largely protruded, against the top of an upright post. He fell to the ground in syncope, from which he soon rallied, but reaction was accompanied by intense pain and tenderness in the hernial protrusion, and extending also throughout the abdomen. I saw him about six hours after the injury. Pulse full and frequent; skin hot and dry; abdomen, tympanitic, painful, and tender to the touch; hernia still unreduced, and about the size of a large hen's-egg. Patient being of plethoric habit, I took a full bleeding from the arm, following it with the administration of opiates in large and repeated doses. I reduced the hernia with but little difficulty after the venesection; remained with patient till morning, continuing the opiates and applying fomentations of hop-water, slightly tepid, to the abdomen.

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[1] Read before the Medical Society of the State of West Virginia, at its annual meeting, in the city of Wheeling, in June, 1872.

8 A. M.—Pulse increasing in frequency—135 per minute; tympanitis, abdominal pain and tenderness also increasing. Direct treatment to be continued, promising to return in the evening.

8 P. M.—Accompanied by Dr. McLane, visit house of patient, who had died two hours previously.

Autopsy—performed four hours after death—revealed extensive peritonitis, but no gangrene. Almost entire extent of visceral and parietal surfaces of peritonæum, particularly the former, highly vascular, with numerous patches of sero-purulent exudation.

CASE II.—John Hall, farmer, aged twenty-seven, was discovered to be the subject of an oblique inguinal hernia on the right side, when about twelve years old, for which a truss was applied and subsequently worn.

In the afternoon of August 26, 1869, while engaged in "carrying up the corner" of a log building (a phrase which most of you will understand) for a neighbor, his truss becoming displaced, his hernia came down, gradually increasing in size, and becoming so painful that he was obliged to come down from the building, and stepping to one side he attempted the reduction of his hernia. Failing in effecting this, both by his own efforts and those of his friends, his father placed him upon a horse and brought him to his home, about two miles distant.

I was sent for and saw the patient about 6 P. M. I found the right groin and scrotum occupied with a hernial protrusion nearly the size of a child's head, firm and elastic to the touch.

Pulse but little increased in frequency; slight nausea, and occasional vomiting. For nearly three hours, at intervals, patient under the influence of ether, I employed taxis, aided by position and the usual auxiliaries, but failed in reducing the hernia to the slightest extent. I then expressed to the patient and friends my conviction that an operation would be necessary, stating that I would return, get the necessary instruments and appliances ready, and would return by day-dawn on the following morning, when, if taxis should still fail, I would operate, the part in the mean time to be kept bathed with cloths dipped in cold water.

On the following morning, accompanied by Dr. McLane, who was then my partner, saw the patient at 6 o'clock. No material charge, either in hernial swelling or patient's general condition. Both Dr. McLane and myself repeated taxis, but with no effect.

At 8 A. M., assisted by Dr. McLane, I operated in the usual manner, opening the sac, which proved to be the tunica vaginalis, and from which escaped a considerable quantity of serum ; divided the stricture at the internal ring, and reduced the hernial mass, which was composed exclusively of intestine.

The wound was brought together by sutures and adhesive straps, spica-bandage applied, and patient placed with hips elevated in bed. I remained with patient during the day, Dr. McLane returning home. About four hours subsequent to the operation, strong reaction came on, pulse became full and frequent, face flushed, head hot and painful, and abdomen tympanitic. I opened a vein in the arm, and abstracted about twenty ounces of blood. As the blood flowed the pulse softened, flush upon the face disappeared, profuse perspiration broke out, and general relaxation ensued. The patient, by this time, expressing a desire to evacuate his bowels, and there being no bed-pan convenient, I placed a large grain-shovel beneath the nates, which was soon filled with a copious discharge of fæces, mixed with a large amount of undigested corn and beans. Tumefaction of the abdomen and tympanites at once subsided, and patient recovered without a subsequent unfavorable symptom—union of the wound being complete in about ten days—soon after which he came to town on horseback to visit me, and to have a new truss fitted.

Some months subsequent to this, his father having been attacked with typhoid fever, he made frequent visits to see me, and after one of these visits I was sent for under the following circumstances: On the night of January 26, 1870, at 11.30 o'clock, I was called upon by a messenger, stating that Mr. Hall, after returning from town in the afternoon, started out to hunt for a squirrel for his father, who was then convalescent, and while moving around on a steep hill-side, viewing a squirrel in a tree above him, stepped upon a round stick of wood which, rolling beneath his feet, gave him such a wrench that his truss was displaced and his hernia protruded. Having failed to reduce it on the spot, and also after returning to the house, a messenger was dispatched for me, but was recalled soon after mounting his horse, the patient having succeeded in reducing his hernia. When, however, he came to examine the scrotum, he discovered that the testis of that side had also disappeared with the return of the rupture. He remained rather comfortable for an hour or more, when he began to experience pains in the abdomen, which gradually increased, so that I was sent for as above stated.

I saw the patient about 1 o'clock on the morning of January 27th; found him in intense anguish, exclaiming, "What shall I do? I cannot stand it! I must die!" and like expressions.

On examination I found no hernia. Testis of right side was absent from the scrotum, and I could detect nowhere along the course of the inguinal canal any body resembling a testis. Pulse 50 per minute; skin rather cooler than normal; pains extended throughout the abdomen, but were rather greatest in right iliac region. Percussion revealed also more flatness in this locality than elsewhere.

I was, of course, puzzled. I was at a loss to know whether the intense pain, which could be alleviated only by constant anæsthesia, induced by ether or chloroform, was neuralgic in character, resulting from the abnormal position of the testis, or whether there was internal stricture.

I got the patient upon his feet, excited cough and emesis, with the hope of reproducing the hernia and bringing with it the testis. All means, however, which I could devise for this purpose failed.

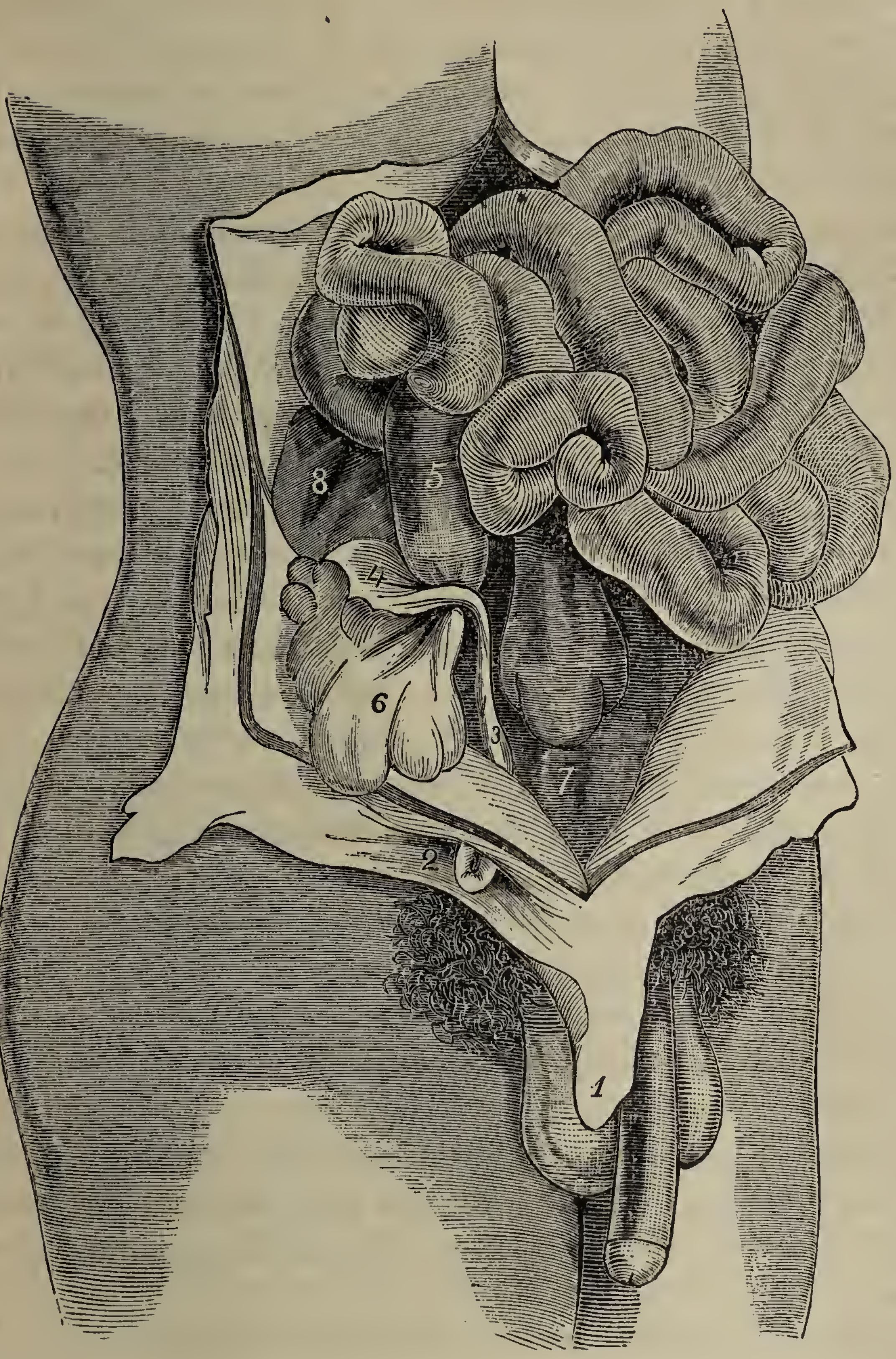
At 3 A. M. I sent for Dr. McLane in consultation, who was equally puzzled with myself. Opiates in full doses were administered, but nothing short of full anæsthesia proved adequate to the comfort of our patient.

We discussed the propriety of an operation, but deferred its execution till mid-day, when we concluded to perform at least an exploratory operation, it being suggested by Dr. McLane that the testis might be compressed somewhere in the course of the inguinal canal. On dividing the tissues so as to expose the external ring, we found the spermatic cord doubled on itself, just without the ring, upon which we made traction in the hope of withdrawing the displaced organ, but without avail.

On introducing the index-finger along the canal to the internal ring, I found it traversed by fibrinous bands diminishing somewhat the size of the ring, so that I could scarcely think it possible for the testis to have receded within the cavity of the abdomen. On introducing the bistoury and dividing some of these constricting bands, and relaxing the ring by position, an immense amount of serous fluid welled out, saturating cloths almost by the armful. We renewed traction upon the cord, but with no effect. As our patient seemed to be sinking, we did not deem it justifiable to proceed further. He expressed feeling some relief after the operation, but continued to sink during the night, having a hæmorrhage from the bowels about 4 o'clock, A. M., and dying two hours thereafter on the morning of January 28th.

Autopsy performed by myself, assisted by Dr. McLane, eight hours after death, revealed the following:

Having opened the cavity of the abdomen, in connection with that of the thorax, by an incision from the top of the sternum to the symphysis pubis, traversed at right angles by a second incision on a line with the umbilicus, and drawing aside the flaps thus formed, the small intestines were found occupying the entire front of the abdominal cavity, largely distended and gangrenous. Indeed, there was no portion of intestine thus brought into view that was not darker in color than the liver. On more minute inspection, we found the spermatic cord lying directly across the ilium at a point between three and four inches from its junction with the cæcum, the testicle, suspended by its cord, lying above and behind the intestine. The constriction of the gut, thus effected by the cord, was so complete that below this point both ilium and cæcum, as also the colon, were empty and normal in color;



EXPLANATION OF THE PLATE.

1. Cavity of tunica vaginalis laid open, showing the absence of the testis and spermatic cord.

2. Spermatic cord doubled on itself, just without the external abdominal ring.

3. The cord within the abdomen leading to—

4. The testis lying above and behind the ilium, near its junction with the cæcum; the cord thus traversing the bowel and forming the constricting cause.

5. The ilium, distended and gangrenous above the stricture, which is here nearly vertical, inclining to the right, was in the original case more nearly transverse, inclining, in its course toward the jejunum, to the left.

6. The cæcum, empty, lying out on the flap; the appendix vermiformis in this subject being absent.

7. The cavity of the pelvis, from which the viscera are drawn aside, to exhibit the course of the cord.

8. Upper portion of right iliac and lumbar regions occupied by empty colon—not visible in the plate.

while above, for the distance of four feet or more, the ilium was deep black from its gangrenous condition and largely distended with fecal matter and gas—the black color being more intense near the site of stricture, and gradually fading toward the jejunum.

Through the kindness of my distinguished friend Prof. William H. Pancoast, of Jefferson Medical College, who, during my recent visit to Philadelphia, generously furnished me with material for the dissection, I am enabled, by the hand of an artist, Mr. Crawford, to present herewith, as nearly as possible, a fac-simile of the autopsical appearance in this case.

The plate is engraved from a drawing taken by the artist from a subject as prepared by myself in one of the anatomical rooms of Jefferson College, representing as faithfully as I could the *post-mortem* appearances as presented to Dr. McLane and myself in our examination made upon the body of our deceased patient.

The representation is, in all its essential features, accurate, varying only in some minor points, owing to slight anatomical differences in the subjects.

The artist has also failed to represent the intestine in its deeply-gangrenous condition, being unable, as he stated, to give it the requisite shading and still preserve distinctly the outlines of its convolutions, lying, as they did, in such immediate contact.

Case III.—Mrs. Kerer, aged sixty-five years, the mother of a large family, had been afflicted with oblique inguinal hernia on left side for many years, for which a truss had been worn.

September 5, 1869.—I was called upon to reduce her hernia, which had been out for forty-eight hours.

I found her with evident symptoms of strangulation—nausea and vomiting, abdominal pains and constipation. After failing in effecting reduction by taxis, I operated, patient under ether, assisted by Drs. James A. McLane, L. S. Brock, and W. L. McLane, opening the sac and dividing the stricture at the internal ring; reduced the protruded intestine, which was of a deep-livid color, but became brighter after division of the stricture and exposure to the air. Patient did well till third day, when high fever occurred; pulse 130 per minute; skin hot and dry, and tongue coated.

Free venesection diminished the pulse to 90 per minute, and other febrile symptoms in like manner. The blood exhibited a decided buffy coat.

Three days after this time an abscess opened into the wound left by the operation, discharging matter of a very offensive odor. Patient after this made a good recovery, and is now in comfortable health, though still obliged to wear a truss.

Case IV.—January 1, 1870, received a telegram from Drs. Kramer and Berch, requesting my presence at Greensboro, Pa., to "operate for strangulated hernia."

On my arrival I found the patient, Willie McCoy, aged eight years, with a hernial protrusion of considerable size occupying the left inguinal region, and extending into the scrotum.

As informed by patient's friends and attending surgeons, the hernia had remained protruded for about ten days, and there had been stercoraceous vomiting for nearly a week past. Patient's general appearance was emaciated and feeble; pulse small and frequent, 120 per minute; abdomen largely distended. Near the middle of the scrotum there was decided discoloration, from which, in connection with the general symptoms, I feared, in common with the attending surgeons, that a fecal abscess was in process of formation. From this suspicion, and the fact that several surgeons had used taxis, I did not feel justified in repeating any manipulation.

The case seemed unpromising, but on the morning of January 2d, assisted by Drs. Kramer, Berch, and W. L. McLane, patient under ether, I operated, opening the sac, dividing the stricture at the internal ring, and reducing the protruded intestine, which was of a dark-brown color, but not gangrenous.

The discoloration mentioned as appearing in the scrotum we found due to the pressure of a mass of omentum which was found not only adherent to the hernial sac (the hernia was non-congenital), but seemed incorporated with the tissues outside, and was doubtless of long standing. I did not excise this, as usually recommended, but contented myself with the division of the stricture and reduction of the protruded bowel.

I never saw the patient subsequently, but was informed he made a rapid recovery. A few months since I learned from the father that, with but one exception, there had been no return of hernia. On that occasion it was the result of jumping from a height while playing with other boys—no truss having been applied since the operation up to this time. The hernia was reduced and truss applied, since which there has been no return or other unpleasant symptom in the case.

Case V.—This is the last with which I shall tax your time on the present occasion. Being one, however, possessed of interest both in its pathological and medico-legal aspects, furnishing, as it did, my first and only experience, thus far, in litigation under a charge of malpractice, you will, I trust, pardon the detail with which I shall give it.

The clinical history of the case as given in my own deposition, and recorded in the legal proceedings in the cause, corroborated as it was essentially by the patient's own testimony and that of Dr. McLane, who was associated with me in the treatment, and upon which the testimony of the medical experts in the trial was based, is as follows:

"On the 27th of December, 1866, my partner (Dr. McLane) and myself were called upon to visit Peter A. Layton, aged seventy years, who was then at the house of his son in Morgantown, and from whom (the patient) we received the following account of his case: 'For some years,' he said, 'he had had trouble occasionally in his right groin; that, on leaving his home in Cassville, seven miles distant, to make his (then) present visit, while mounting horse, he felt something give way in this region, which continued to give him uneasiness, and which was still more greatly increased by a sudden spring made by his horse when about midway between Cassville and Morgantown. On examination, we found in the right inguinal region an enlargement something near the size of a hen's-egg, which we diagnosticated as a hernial protrusion, and which, by taxis, we, as we believed, reduced. There remained, however, at or near the site of the external abdominal ring a small lump about the size of a small almond, which we believed to be either an enlarged gland or, possibly, a small portion of omentum unreduced. In the absence, however, of decided symptoms of strangulation, we did not deem a surgical operation advisable, especially after finding his bowels to respond promptly to a mild cathartic. After the operation of the cathartic he was comparatively comfortable, and, though still complaining slightly of tenderness on pressure over the lump, there were no evident symptoms of strangulation nor was there any constitutional disturbance more than could be ascribed to an ordinary cold, under which he was then laboring. We advised him to remain in town, keeping quiet, for a few days, where we could watch his case more closely and meet any indication that might arise in its progress. He decided, however, to go home, and we applied a truss to prevent, on his way, a return of the hernial protrusion we had reduced.

"On the 4th of January following, I was sent for to visit him at his home. There were, at this time, decided febrile movement, bowels constipated, pulse 100 per minute, skin rather hot and dry, tongue coated, some thirst, and impairment of appetite. On examination, I found a circumscribed phlegmonous swelling, occupying adjoining portions of the right inguinal and hypogastric regions, circular or rather oblong in shape, about four to four and a half inches in its longest, and three and a half to four inches in its shortest diameter, hard, tender, hot, and painful, in short, presenting all the characteristics of an abscess in progress.

"Considering the location of the swelling, in connection with the history of the case, I expressed to the patient and friends the fear that the bowel might be involved in the abscess, and that his case was by no means free from danger. I directed the application of warm emollient poultices to mitigate inflammatory action and hasten suppuration, and ventured to give a mild aperient (the citrate of magnesia), not for the purpose of exciting active peristaltic action, but to invite a flow of serum into the bowels so as to soften their contents and allow of their easy passage along the intestinal canal. This acted kindly and effectively. After this I expressed to the patient and friends the hope and belief that, inasmuch as the action of the medicine had demonstrated the fact that the continuity of the intestinal tract was unbroken, the bowel was not probably in the abscess. Anodynes were administered, poultices continued, under which the heat, redness, and hardness of the swelling diminished, the bowels, meantime, responding to the influence of aperients whenever administered. By the 10th of the month, six days after my first visit, there was very decided fluctuation in the swelling, and, on light percussion over the softest central point, slight resonance.

"I opened the abscess at the most yielding and prominent point, requiring for the purpose an incision but little beyond the depth of the skin. This was followed by a copious escape of pus, fecal matter, and gas, of a very offensive odor. I then had no doubt that the bowel communicated with the cavity of the abscess, and so expressed myself to the patient and friends. On the application of paper soaked in a solution of acetate of lead, and subsequently dried, to the gas during its escape from the opening, it was instantly tarnished black, showing the presence of sulphuretted hydrogen gas; and the diagnosis of intestinal communication was rendered conclusive by the escape, after the lapse of some days, from the opening, of an intestinal worm.

"On the 11th of the month, the day after the abscess was opened, Dr. McLane visited the case with me, between whom and myself there was full and complete concurrence as to the pathology and treatment of the case throughout. The poultices were continued until after the subsidence of all inflammatory action, after which simply retentive dressings were kept applied, the patient's general condition meanwhile improving, the discharge gradually diminishing in quantity, and the aperture decreasing in size until, after the expiration of a few weeks, it was entirely healed. The patient, so far as we know, has never had any return of his hernia, no intestinal obstruction or other serious inconvenience resulting from the accident."

After waiting for nearly five years for compensation for our services, and receiving information that through the advice of a meddlesome neighbor, who was exceedingly "wise in his own conceit," our quondam friend and patient would not only resist payment, but was seriously meditating an offensive movement in law, we decided at once to take the initiative. Still desirous, however, on account of old friendship, to give no unnecessary trouble, as also on account of our aversion to "the law's delay" attending a suit at court, we reduced the bill to bring it within a magistrate's jurisdiction (a sum not exceeding $100), and instituted suit accordingly before a justice for said amount due us.

On the day of the trial we were confronted by the adviser of the defendant, who appeared as his agent and entered a plea of "Maltreatment, damage $500," demanding, under the statute, a jury and a continuance of the cause. Six men, the number required by law, were selected, and the time for trial agreed upon.

On the day fixed for the hearing of the cause before the jury, February 20, 1872, each of the parties to the suit appeared, ready for trial. We, as the plaintiffs, agreeing to waive all questions as to the admissibility of the defendant's claim for damages, expressed our willingness to proceed to trial on the merits of the cause as presented. We demanded, however, that the defendant, in filing his answer, should be more explicit in its wording. His attorney whom he had employed for the occasion failing to be present, he called upon his agent, adviser, and swift witness, to write the answer, which reads thus:

January 8 1867

Drs McLane & Brock Dr To Peter A Layton

For Mal Treatment [we had taught him to spell *mal* at our previous meeting] in Medical practice for cuting my bowels thare by causing me to be confind a long time to bed and hous and causing me grate sufering and imparing my heath in jeneral

I for the abov treatement clame a damage of Five hundred dollars.

In proceeding to trial, we, as plaintiffs, introduced testimony, first, simply to prove that the services were rendered, their nature and value.

The defence, in endeavoring to establish his claim for damages, introduced himself and several other witnesses, by most of whom we proved that he experienced relief after the operation, that he made a good recovery, and that his health was as good as, if not better than, before.

His own account of the case (under oath) fully harmonized with mine, differing only as to the depth of the incision, and the question as to the cutting of the bowel.

None of his witnesses, excepting himself and his agent and adviser in the suit, ventured an opinion on this point. The latter knew the bowel was cut because he "saw it done;" he "knew it because he saw the *manure* escape."

I will not tax your time in narrating the details of our cross-examination of this witness. Suffice it to say that, after eliciting his declaration before the magistrate's court that he professed to be familiar with the subject of hernia, understood its nature, the distinction between hernia and abscess—being a saddler by trade, among other things he made trusses and applied them—he afterward had occasion to conclude, before proceeding far in his endeavors to answer questions based upon his assumed knowledge, that, according to his own statement, he didn't "know any thing very certainly."

In our rebutting testimony, disproving the allegation as to the wounding of the bowel and the consequent claim for damages, I gave, upon the witness-stand, a full clinical account of the case, then proceeded to demonstrate, by diagrams upon the black-board, the anatomy of hernia in its different varieties, and explained, in detail, the peculiarity of the case in question; that, in our efforts in reducing Mr. Layton's hernia, there may have remained a small segment of bowel unreduced, or, which was not improbable, that a segment of bowel (not its entire calibre) had, subsequently to this, protruded and become strangulated in the internal ring; that the consequent inflammatory action set up in the surrounding parts resulting in the effusion of plasma united the adjacent serous surfaces of the viscus and abdominal parietes; meanwhile the strangulated segment of gut sloughing off, allowed the intestinal contents to escape, thus forming an abscess. The abscess being opened in due time, as was right and proper, the "manure" escaped. Not, however, in consequence of any wound of the bowel having been inflicted in the operation, but in consequence of a communication having been established between the cavity of the bowel and that of the abscess in the progress of diseased action, regulated by the conservative forces of Nature, as I had just described.

In addition to the blackboard illustrations, by means of tissue-paper, suitably prepared, I represented an intestine strangulated at the internal ring, its surrounding serous surface, as a result of inflammatory action, united by the interposition of plasma to the adjacent parietes of the abdomen, thus closing communication between the point of strangulation and the cavity of peritonæum. The strangulated segment of intestine sloughing off allowed the intestinal contents, which in the representation were of sawdust, to escape through the opening made by the sloughing process. An abscess being thus formed, was opened externally by the knife, when the contents of both abscess and intestine escaped through the incision, no wound of the bowel having been inflicted in the operation.

I furthermore explained to the jury how it might have happened if I had omitted to give exit to the pus and fecal matter by operative procedure; these would have burrowed in the surrounding parts, giving rise to extensive sloughing, and perhaps escaping into the cavity of the abdomen would, beyond question, in that event have produced death.

This theory of the case, with the accuracy of the demonstrations, was fully confirmed by the testimony of Drs. Joseph A. McLane, F. H. Patton, and L. F. Campbell, who were present as witnesses, all graduates and practitioners of large experience.

We then introduced the deposition of Prof. Pancoast, Sr., of Philadelphia, who, according to the testimony of the medical gentlemen named above, was unsurpassed at the present day as an operating surgeon; according to their information, no higher authority was recognized by medical men generally throughout the United States than the opinions of Prof. Pancoast upon questions relating to surgical anatomy or the principles of surgical pathology.

Dr. Pancoast, in his deposition taken in Philadelphia, in response to interrogatories directed to the point of proving him an expert, states as follows:

"I have been a public teacher of anatomy and surgery since 1830. I now hold the chair or professorship of General, Special, and Surgical Anatomy in Jefferson Medical College of this city, and have so held the same since 1839–'40. I am the author of 'Pancoast's Surgery,' 'Pancoast's Wistar's

Anatomy,' and 'Pancoast's Quain,' all of which are used by the medical profession, and largely as text-books in the colleges of the several States."

The clinical history of the case, as read in your hearing, being furnished Dr. Pancoast for his examination upon it, the subjoined interrogatories, as propounded by me, with his answers annexed, follow in the order here given:

Interrogatory 5.—Judging from the history of the case above given, do you or not consider the opinions stated to have been expressed to the patient and friends, in the light of the facts as presenting themselves at the time those opinions were given, as correct, or such as were justified by the principles of surgical pathology as relating to the points involved?"

Answer.—"I regard them as entirely correct, perfectly reconcilable, and justified by every priuciple of sound surgery."

Interrogatory 6.—"Was, or was not, the treatment in the case, as described, such as is regarded justifiable and proper by the authorities upon the subject, and in accordance with your own experience in such cases?"

Answer.—"Most certainly; I am firmly of the opinion that the treatment was not only correct and proper, but the only one suited to the case."

Interrogatory 7.—"Is it your opinion that the escape of fecal matter, after the opening of the abscess in this case, was the result of a wound of the bowel; or, that a portion of the bowel, having become strangulated in or near the internal abdominal ring, had sloughed off, thus opening a communication with the cavity of the bowel and that of the abscess, and that the abscess being opened the contents of the bowel escaped with the pus, or what is your opinion touching this point?"

Answer.—"I am perfectly clear in my opinion, drawn from the above statement, that the bowel could not have been opened by the knife. The bowel must have been opened by natural sloughing at the ring, and let the contents of the bowel down to form an abscess."

Interrogatory 8.—"Do you or do you not, then, consider it was right to open the abscess at the time and in the manner it was done?"

Answer.—"It was right and proper, and absolutely necessary to do so."

Interrogatory 9.—"What might have happened had not an external opening been made at the proper time?"

Answer.—"Extensive sloughing, and, possibly, death."

Interrogatory 10.—"Suppose that in operating in this, or any similar case, I had carried my incision too deeply, going beyond the limits of the abscess, and had inflicted a wound of the bowel, what would, in all probability, have been the result?"

Answer.—"No disadvantage whatever; for when a bowel sloughs we have sometimes to make a free opening in it, purposely, to let its contents escape and prevent them getting into the belly, which would be fatal."

Interrogatory 11.—"Do you or do you not consider the patient in this case to have sustained any damage by the treatment adopted?"

Answer.—"Not at all. I consider the treatment most judicious and skilful, and that the patient is indebted to it for his life."

Interrogatory 12.—"Would you regard the party who had been the subject of an inguinal hernia, so far as the dangers to life, health, and comfort, are concerned, in a better or worse condition after such a result as has obtained in this case, than he had been previously?"

Answer.—"From several other cases of the sort which I have seen, I should think the patient would get on as well for the future as if nothing had ever happened to him; that the hernia will be cured, and the patient saved the risks thereof.

(Signed) "JOSEPH PANCOAST.

"JOSEPH FRAVHISH,
"*Commissioner for West Virginia in Pennsylvania.*"

The case, on our side, was closed by reading to the jury the reports of some authenticated similar cases, in which no operation was performed, and which proved fatal.

Our opponent was now at liberty to introduce any rebutting testimony to ours that he might desire. He introduced none, except his own person for the inspection of the jury. On exposure of the parts faint traces of cicatrix were visible, but no hernia, no artificial anus, or other deformity of any kind.

He had had summoned for the occasion as experts, as we suppose, a homœopathic practitioner and a regular (claiming to be), who were present as listeners during the entire trial, but neither of whom was brought upon the witness-stand.

It may be a matter of surprise, though illustrating the fact that law has its uncertainties as well as other things, when told that the case being submitted upon the evidence, as detailed above, the jury failed to agree, differing upon the point as to whether or not the intestine had been wounded in the operation.

It may seem more surprising when told that, though the minds of all the jury, with one exception (possibly one other), were clear in the opinion that no wound of the gut had been made, the doubt existed in the mind of one who is a man of mature experience and close observation in many things; who had been an acting justice of the peace for many years, had been himself a student of medicine (botanic school, I believe), and who frequently prescribes and attends cases of sickness.

It is, perhaps, needless to add that the plaintiffs, viewing the case from their stand-point, perceived in the result the force of the sentiment expressed in Pope's "Essay on Criticism:"

"A little learning is a dangerous thing;
Drink deep, or taste not the Pierian spring;
For shallow draughts intoxicate the brain,
And drinking deeply sobers us again."

The jury failing to agree, the law presented two alternatives: the one to select a new jury and re-try the case; the other, by consent of parties, to submit it to the magistrate, who had presided in the trial, for his decision.

The latter being agreed upon, the magistrate entered judgment in our favor for full amount of claim with interest, barring the sum of four dollars (items for prior attendance), upon which the defendant pleaded the statute of "limitations."

In addition to the lessons taught by the proceedings in connection with this last case, there are several points, as deduced from my experience with hernia and suggested in the course of my investigations upon the subject, to which I might direct attention, but I will conclude with the mere mention of a few of these points:

1. The value of venesection as a therapeutic agent in actual or threatened peritonitis supervening upon surgical operation for the relief of strangulation.

2. The posture of the patient most favorable to the reduction of hernia by taxis, either as an original measure or after the protrusion has been exposed by the knife.

Every surgeon must have observed in his dissections upon the cadaver, as also in his operations upon the living subject, the effect of position of the lower limbs upon relaxation and contraction of the abdominal rings; that elevation of the limb does not give full patency to the external ring of the corresponding side unless it be accompanied with inward rotation. And that, although the limb remain extended, if rotated inwardly, full relaxation and patency of the ring upon the corresponding side follow.

While most authors insist especially on elevation of the limb, but few direct attention to the importance of inward rotation.

3. The practicability of reducing, in some instances, strangulated hernia after its exposure by the knife without further use of the instrument. Although, in my experience, I have always found it necessary to divide the stricture, I am satisfied cases do occur where it may be avoided. Taxis, after exposure of the protruded viscus or viscera, being susceptible of more direct application than it can be through the skin and other coverings of the hernia, must, of course, be more efficient.

Where this procedure is practicable, it is evident the operation is less complicated and attended with diminished risk. This is a point I have seen nowhere noticed except in Prof. F. H. Hamilton's excellent "Report on Abdominal Hernia," in "Bellevue and Charity Hospital Reports, 1870."

4, and lastly. The unique character of Case II. of this report.

The literature of the subject, so far as I have had access to it, furnishes nothing upon record like it. And yet, as is evidenced by this case, the accident occurring in its history is one of those to which congenital hernia may be liable.

Clinical Records from Private and Hospital Practice.

I.—*Case of Occluded Vagina; Labor at Full Term; Forceps; Resuscitation of a Still-born Child.* Obstetrical Service, Bellevue Hospital. W. T. Lusk, M. D., Visiting Physician; Dr. Swan, House Physician. Reported by Dr. Lusk.

Mary F., aged twenty-one, single, admitted October 2, 1872. Patient menstruated for the last time in February. On the 15th of November, at 7 p. m., she entered the lying-in ward, after having suffered from labor-pains during the afternoon. Through the night and following morning these pains continued without any corresponding advance in the labor, and I was, in consequence, in my afternoon visit, requested to investigate the patient's condition.

The head was engaged in the superior strait of the pelvis, and could be clearly distinguished through the intervening tissues. The vagina was short, and there was no trace of the cervix uteri. In the upper portion of the vagina was a small fossa, just large enough to admit the extremity of the index-finger, which apparently ended blindly. Search was made through the speculum for some possible communication with the organs above, but without success. The tissues forming the *cul-de-sac* were puckered, and a minute opening could have been easily overlooked. At first I was impressed with the idea that the dimpled spot was the patent cervical canal closed above by the complete adhesion of the thickened membranes—an impression deepened by the tenacity of the tissues intervening between the finger and the child's head. On pushing upward, however, with the finger, working the way gradually, a passage was formed, running backward and upward in direction of promontory, which was recognizable as formed by two layers of vaginal tissue, the thinness of which, it was now noticed, was due to the pressure of the child's head. Boring away slowly with the finger, and with repeated pauses, a passage was finally opened, in the course of a couple of hours, of about two inches in length. I now resolved to suspend further procedures in order to show the case to my colleague, Prof. Barker, who accordingly met me in consultation at the hospital, at 8 P. M.

During his examination, Dr. Barker, thinking that he detected fluctuation with peculiar distinctness, near the upper part of the tunnel I had formed, made sudden pressure upon the suspected point, and succeeded in pushing into the uterine cavity. The escape of the waters was followed by dilatation of the cervix to the size of a quarter of a dollar.

As the sufferings of the woman had been great, and as the uterine contractions had been feeble in character, after waiting for two hours, and finding no further expansion of the cervix had taken place, I introduced successively the two larger sizes of the Barnes dilator, and, by their aid, succeeded in the course of fifteen minutes in stretching cervix and vagina sufficiently to admit of the ready application of the forceps. Tractions of moderate power, but repeated at intervals for about a half-hour, brought the head to the floor of the pelvis. Here flexion and rotation occurred only a few moments before the passage of the head through the vulva.

The child, which weighed eight pounds, made no attempt to breathe, though the heart continued to beat distinctly. The scalp-tumor was situated over the large fontanelle, the forehead was perpendicular, and the posterior portion of the head formed a steep inclined plane. The configuration was such as is found (in a more marked degree) in brow-presentations. I have no doubt that the deformation in this case was due to the pressure exercised on the transversely-situated head by the two ischia. At a period some time preceding delivery, I had noticed the direction of the forehead to the left ilium, and had attempted to rotate it to the rear, but desisted upon finding that rotation could not be accomplished without resorting to unjustifiable force. The absence of pains and the condition of the patient made me loath to remove the forceps, and trust the completion of the labor to Nature.

For the resuscitation of the child, the various reflex stimuli were employed, and resort was made in succession to Marshall Hall's, Sylvester's, and B. S. Schultze's ready methods. A return of color, and spontaneous respiration, only occurred after employing Schultze's plan. As the latter is not very familiar to practitioners in this country, I may be pardoned for describing it:

The operator seizes the child under the arms, the index-finger of each hand in the arm-pit, the thumbs over the anterior portion of the trunk, the remaining fingers placed along the back, which is turned toward the operator, while the head is steadied between the palms of the hand. As the operator stands up, the child, so held, is allowed to swing between his outspread knees. The tractions thus made in both directions upon the ribs, by the pectoral muscles above, and the abdominal muscles below, produce the widest separation of the ribs, while the weight of the liver causes descent of the diaphragm, and thus inspiration is produced. Next, with extended arms the operator swings the child upward until the breech and legs fall forward toward the abdomen. When the body is thus doubled up, the ribs close together, the diaphragm is pushed upward, and forcible expiration takes place, driving out through the mouth and nostrils great quantities of mucus and fluids (when respiratory movements have taken place previous to birth) from the air-passages. Still keeping the arms extended, the child should be allowed, after a few moments, to swing back between the legs. In this way expiration and inspiration are to be maintained, until spontaneous respiration occurs. As the temperature is apt to fall during the swinging movements, warm water should be kept handy, in which to occasionally plunge the child. The child thus resuscitated lived two days, crying, however, most of the time. *Post-mortem* examination showed the lungs well expanded, no signs of analectasis, but great congestion of the sinuses and vessels of the brain. The brain-substance was intensely injected, so as to possess a faintly-pinkish color. After her confinement, the mother was transferred to the medical side, it being feared to place her in an obstetrical ward, owing to a tendency to febrile reaction that had been recently observed among the puerperal women there placed. Nearly four weeks have elapsed since confinement. Patient has all along done well. No tendency, as yet, shown on the part of the tissues to re-adhere.

From the patient's history, there is nothing to indicate any condition which could have led to vaginal occlusion after conception took place. The occurrence of conception, as well as the fact that she had menstruated regularly, though scantily, up to the time of pregnancy, shows the occlusion could not have been previously complete. In absence of any means of verification, I purposely avoid hypothesis.

II.—*Cases of Sunstroke in Bellevue Hospital during the Summer of* 1872. By W. H. Katzenbach, M. D.

During the months of July and August, a large number of cases of insolation were admitted into Bellevue Hospital, but I can find records of only fifty-five. Many of these were brought in by the ambulance-surgeons, and on the way to the hospital were sponged with ice-water, ice-bags being also applied to the head. Thus, a good proportion of those who were found in a state of coma had partially or completely regained consciousness when admitted.

The records are not as complete as could be desired, so many cases being under observation at one time, and the constant attention which they required preventing the medical attendants from making notes. This was especially the case in July.

Only a few of the patients remembered how they were attacked; and these stated that, while they were engaged in their usual occupations, they were seized with pain at the top of the head, burning in character, as if the head were on fire, together with dizziness. These symptoms lasted but a short time, when, suddenly, consciousness was lost.

Of the 55 cases, 44 were admitted in a state of unconsciousness. Then their condition was as follows: The skin was dry, and excessively hot to the touch in the majority of the cases; pallor of surface and congestion in about an equal number of cases.

The *pulse*, in a few cases, was slow, full, and strong; but in most cases it was frequent, small, and weak. It ranged from 68 to 168.

The *respiration* increased in frequency—stertorous in some cases, quiet and easy in others; but, in most of the severe cases, it was moaning and noisy. Pulmonary congestion, marked by cyanosis and moist *râles* in the chest, was developed in nearly every case after admission.

The *temperature* ranged from 99½° to 110½°.

It was 100° and over in 43 cases.
" 105° " " 27 "
" 107° " " 16 "
" 108° " " 10 "
" 110° " " 3 "

The *pupils* were contracted in 19 cases, dilated in 12, their condition not being noted in the remainder. In no instance is it recorded that they were unequal, or responded to light.

Vomiting occurred in 13 cases.

Purging in 19.

Vomiting and *purging* in 8.

The dejections were yellow, liquid, and of offensive odor.

Seven cases were catheterized. In all, the quantity of *urine* was very small. In one, albumen was found. The reaction in one case was alkaline.

Convulsions were not infrequent. They were epileptiform in 4 cases; tetanoid in 12; epileptiform and tetanoid in 3.

Delirium is recorded in 7 cases; being associated with convulsions in 4 cases.

Hemiplegia existed in one case, but no paralysis of any kind in the other cases.

Of the 55 cases, 23 died.

The shortest *duration of the attack* in those who died was ten minutes; the longest, three days.

In those who recovered, the shortest was one hour; the longest, eighteen hours.

Recovered in ten hours, 11; in five hours, 6; in three hours, 4; in an hour, 2.

The mode of dying, in most cases, was by apnœa, although in many cases it was by rapid asthenia.

Autopsies were made in three cases.

The brain and membranes were congested in 2 cases; anæmic, 1; congestion of the remaining viscera, 3; heart contained fluid blood, 1; blood very dark and fluid, 1; not noted in the others.

Treatment.—Immediately on their reception, the patients were stripped of all their clothing, and laid on the floor or beds near the windows. Ice was applied to the head, and sponging of the whole body with ice-water was commenced at once, and continued till the temperature and pulse were lowered. Some cases were covered with a wet sheet, and this sprinkled continuously with cold water, at Dr. Flint's suggestion (*Vide* Case IV.). When apnœa existed, marked by cyanosis, dry cups were applied to the chest in front and behind. Convulsions were relieved in some instances by dry cups along the spine, or by chloroform inhalation. Tetanoid convulsions, tonic spasms of the extremities, and convulsive twitchings were treated by subcutaneous injections of a solution of Calabar bean. (*Vide* Cases I. and II.)

Stimulants were given to those who were able to swallow, where the pulse was very rapid and weak, with good results.

Morphia, subcutaneously, in a few cases, was employed with marked benefit. (*Vide* Case VII.)

Sequelæ.—As those who recovered remained in hospital but a short time, it has not been possible to observe the sequelæ; but, while they were under observation, the following were noted: "Tightness" in the head, 1 case; pain in the head, 4; "general weakness," 4; "general weakness," with dizziness, 2; "general weakness," with nausea, 1; transient hemiplegia, 1; pneumonia, 2; intestinal colic, 1.

Chills, followed by fever and sweating, resembling paroxysms of intermittent fever, occurred in 1 case, where there had been no exposure to malaria, as far as could be ascertained.

The histories in eight cases are as follows:

Case I.—Michael D., aged forty-five years, gardener; brought in by ambulance.

August 13th, 5.30 p. m.—Pulse 148; temperature 108°; comatose; breathing labored; moaning constantly. Pupils contracted. Ambulance-surgeon states that the patient vomited at the police-station. Has purged since he entered hospital. Catheter introduced, but no urine obtained. Physical examination reveals *râles* over both sides of the chest. Dry cups applied to chest, and sponging with ice-water ordered.

6 P. M.—Pulse 160; temperature 105¼°. Pupils not so much contracted. Is now grinding his teeth and biting his lips.

6.15 P. M.—Pulse 154; temperature 104°.

6.35 P. M.—Pulse 140; pupils quite dilated; still moaning. Upper extremities tremulous. Right lower extremity flexed, the leg on the thigh and the thigh on the abdomen, very rigid, relaxing spasmodically when forcible extension is made. Sponging stopped.

6.45 P. M.—Pulse 136; respiration 38; temperature 99¼°; still moans, but the limbs are more quiet and not so rigid. Pupils more dilated.

7 P. M.—Pulse 136; temperature 101¼°; quieter than before. Still unconscious. Muscular twitchings continue. Sponging resumed.

7.15 P. M.—Pulse 132; some convulsive muscular twitchings. Ordered solution of Calabar bean, mixed, to be injected subcutaneously. Sponging discontinued.

7.30 P. M.—Pulse 120; temperature 100½°; head turned to the right and rigid. Motion of extremities confined to left leg. Muscles relaxing. Breathing more quiet.

7.55 P. M.—Pulse 124; temperature 101°; has just vomited. Tetanic contractions of sartorius and gastrocnemius of right leg. Resists attempts to open his eyelids. Injection of Calabar bean repeated.

8.15 P. M.—Pulse 124; respiration 48; temperature 102½°; since last note has had several tetanic convulsions, throwing him about the bed violently. These have in a great measure subsided. Sponging resumed.

8.35 P. M.—Pulse 128; respiration 48; temperature 100¾°; tonic and clonic contraction of the muscles continue, though not as marked as at last note. Injection of Calabar bean repeated.

9.15 P. M.—Pulse 112; respiration —; temperature 101¼°; is lying quiet. Respirations rapid, but not noisy. Twitchings now and then. Sponging again ordered.

10.10 P. M.—Is now able to answer questions. Muscular twitchings considerable. Is very restless. Says he has some pain in the head—frontal region. Gives his name. Asks for a drink, and sits up to take it.

10.30 P. M.—Pulse 116; temperature 101½°. Has just vomited matter like coffee. Feels nausea. Complains of weakness.

11.40 P. M.—Pulse 100; respiration 34; temperature 102¼°. Is now lying quiet. No muscular twitchings. Has been vomiting. No pain, but says he is weak.

August 14th, 12.30 A. M.—Pulse 116; respiration 40; temperature 102°. Quiet. Answers rationally. Feels weak, and vomits now and then. Muscular twitchings have reappeared. Gave injection of Calabar bean.

7.40 A. M.—Pulse 92; temperature 100°. Is incoherent. When he turns his head, experiences a "lightness."

6.45 P. M.—Weakness only. Relishes milk. Pulse 86; temperature 101°. A few watery passages to-day. The temperature increased on the 15th, and he complained of pain in the abdomen. On the 16th he became delirious, getting out of bed and walking about the ward, and into other wards. On the 17th signs of pneumonia appeared, and on the 21st he died.

No autopsy.

CASE II.—Leon C., aged thirty years; admitted, 6 P. M. July 3d, unconscious, delirious, shouting, opisthotonos; tonic spasm of flexor muscles of upper extremities and feet, muscular twitching. Pupils somewhat dilated. Involuntary evacuations from the bowels. Cups were applied to the spine.

7 P. M.—No opisthotonos. Spasm of extremities and muscular twitchings more violent. Ordered to be chloroformed. Urine drawn from the bladder gave specific gravity 1020; acid reaction, and albumen in small amount.

8.30 P. M.—Temperature 101¾°. Convulsive movements somewhat relieved by chloroform inhalation, but became worse as soon as influence of chloroform passed off.

9.25 P. M.—Temperature 102½°. Muscles still rigid. Slight twitchings continued. Breathing, which was previously noisy, is now quiet. Chloroform has been inhaled continuously since last note.

9.45 P. M.—Chloroform discontinued, and ♏x. of Calabar bean (representing gr. j) given subcutaneously.

10.45 P. M.—Patient more quiet. Slight twitchings still persist; also, some rigidity of the arms and legs. Gave some subcutaneous injection, as at last note. Pupils less dilated, and react. Pulse 84; respiration 32; temperature 101¼°.

11 P. M.—Muscular twitchings continue. Injection repeated.

11.45 P. M.—Only slight twitchings. Injection repeated. Patient is conscious; looks bright; says he feels well; and breathes quietly.

12, midnight.—Pulse 84; respiration 25; temperature 101⅞°. Slight twitchings still, but rigidity gone. Injection repeated. Sponging stopped. Whiskey ℥ ij given, which was taken with apparent relish.

July 4th, A. M.—Pulse 76; respiration 20; temperature 101°. Feels well this morning. P. M.—Pulse 68; respiration 20; temperature 99½°.

July 6th.—Discharged to-day. Previous history not obtained.

CASE III.—Patrick H., aged thirty-one; coachman; admitted, 5.30 P. M. July 2d, unconscious. Pulse, 118; respiration 24; temperature 105½°. Pupils normal. Laid on the floor near a window. Ice applied to the head, and continuous cold sponging employed.

7 P. M.—Pulse 76; respiration 20; temperature 99°. Ordered to be put to bed, and covered with a sheet.

8 P. M.—Pulse 100; respiration 26; temperature 99¼°.

12, midnight.—Pulse 86; respiration 22; temperature 99 .

July 3d, A. M.—Pulse 76; respiration 20; temperature 99°. Feels well, and asks to be discharged. Says he was perfectly well up to yesterday morning. He usually perspires very freely; but yesterday his skin felt dry, and he had some headache. About noon he took a drink of brandy; this was followed by several others. He continued to feel as before. Left the stable to go home, and remembers nothing till he found himself being sponged in the hospital ward. Discharged to-day.

Case IV.—Thomas K., aged thirty-six years, laborer, admitted, at 2 p. m. July 2d, unconscious; pupils contracted; respiration quiet; chest not examined; pulse 150; respiration 22; temperature 110½°. Patient was stripped at once, laid on the floor, wrapped in a wet sheet, and sprinkled with cold water.

2.35 p. m.—Pulse 150; respiration 36; temperature 110°. Ordered the following:

℞. Olei tiglii, gtt iij.
Olei ricini, ℥ ii.
Olei terebinthinæ, ʒ i.
M., et sig. enema.

3.25 p. m.—Pulse 168; respiration 40; temperature 108°. Gave spirits of chloroform ʒ j, per orem. Enema has acted. Breathing becoming stertorous.

4 p. m.—Pulse 158; respiration 48; temperature 104¾°. Becoming cyanosed. Ordered to be removed from the sheet, and dry cups applied to chest.

5 p. m.—Cyanosis much diminished; pulse 130. Put in wet sheet again, and the sprinkling continued.

5.30 p. m.—Pulse 126; respiration 28; temperature 102°. Patient has been vomiting. Wet sheet and sprinkling stopped. Cold sponging ordered.

7.15 p. m.—Pulse 120; respiration 24; temperature 101⅛°. Has been struggling. Respiration noisy. Pupils widely dilated and do not respond. Face congested. Pulse being very weak, ♏ x tr. digitalis given subcutaneously. Appears to notice what is going on about him.

9.20 p. m.—Pulse stronger and fuller.

9.45 p. m.—Temperature, 100¾°. Breathing quiet. Rigidity of upper extremities marked. Repeated subcutaneous injection of tr. digitalis.

10 p. m.—Sleeping. Pulse irregular.

12, midnight.—Pulse 86, small and weak. Respiration 48; superficial. Temperature 101¼°. Wide awake, and appears to notice. His head being off the pillow, he attempts to replace it when requested to. Gave sol. morph. sulph. Mag., ♏ vj, subcutaneously.

July 3d, a. m.—Pulse 92; respiration 18; temperature

100°. Sleeping quietly. Pupils somewhat contracted. Ordered sherry wine and extra diet of milk and eggs; of the first ℥j every two hours. Has had some diarrhœa to-day.

July 4th.—Pulse 88; respiration 22; temperature 101°. P. M.—Pulse 92; respiration 28; temperature 101½°.

July 5th.—Pulse 84; respiration 30; temperature 101°. Lungs and heart examined. Posteriorly on right side a few moist *râles.* Respiration rough in character over the chest behind. Anteriorly the respiratory murmur is feeble; otherwise good. Heart-sounds good. Patient's mental condition is dull. Has been vomiting.

July 13th.—Mental condition about the same. Feels strong bodily. Previous history not obtained. Discharged to-day.

CASE V.—Thomas M., aged thirty-six; married; laborer. Admitted at 5.30 P. M., June 28th, in an unconscious condition. Pulse 132; respiration 54; temperature 105½. Pupils dilated; face and forehead congested, veins of latter prominent. All the muscles of the flexor aspect of the extremities, the occipito-frontalis and pectoralis, in a state of tonic spasm, with twitchings.

Examination.—Respiration harsh, except in lower part of chest behind, where it is inaudible; percussion-note somewhat dull in same situation. Action of *heart* rapid and labored, sounds good; no murmurs. *Liver*, dulness normal. *Spleen* not enlarged. Patient was divested of his clothing and put upon the bed. Ice was applied to the head, and the body was sponged with cold water. An enema of ol. terebinthinæ was ordered.

7 P. M.—Temperature 102⅜°. Muscular twitchings more violent and convulsive. Thighs and legs rigidly flexed; vomiting of greenish matter. Ordered dry cups to the spine, to be kept on twenty minutes. Whiskey ℥ss every hour.

8.30 P. M.—Pulse 90; respiration 42; temperature 101°. Twitchings almost entirely ceased. Pupils respond to light. Patient opens his eyes when spoken to, but makes no reply. Is still vomiting. Ordered to be sponged with cold water for five minutes, and then to be covered with a blanket.

11 P. M.—Quite rational; skin still hot; pulse good.

June 29th.—Pulse 72; temperature 100¾°. P. M. Pulse 70; respiration 18; temperature 100¾°.

30*th.*, A. M.—Pulse 58; respiration 22; temperature 100°. Patient is still in bed, feeling weak, but otherwise well.

July 1st.—Out of bed this morning. Says that on day of admission to hospital he had been working all day in the sun. Felt as well as usual till about 2 P. M., when he began to feel dizzy, and had pain in the top of the head, extending down over the forehead. Soon fell, and lost consciousness. Discharged to-day.

CASE VI.—Bridget M., aged twenty-four; single; domestic. Admitted 9.25 P. M., July 1st, in a semi-conscious condition. Physical examination of chest negative. Pulse 152; temperature 108⅝°. Ordered sponging of the body with cold water.

10.30 P. M.—Patient had a tonic convulsion, lasting about five minutes, followed by muscular trembling. Pulse imperceptible at the wrist; temperature 104¾°. Pupils widely dilated, and do not respond. Semi-conscious; mirthful delirium.

11 P. M.—Vomiting. Twelve wet cups were applied over the spine and allowed to remain half an hour. Nine ounces of blood thus drawn. Stimulating enema given.

11.45 P. M.—Pulse 140; respiration 48; temperature 108°. Sponging has been continued. Pupils a little smaller. Ordered tinct. aconit. rad. (Fleming's) ♏ ij and whiskey ℥ ss. every half-hour.

July 2d, 12.45 A. M.—Pulse 136; respiration 48; temperature 107°. Sponging, aconite, and whiskey, continued.

3 A. M.—Pulse 120; respiration 28; temperature 102½°. Conscious and rational. Feels well.

8 A. M.—Pulse 84; respiration 22; temperature 99¾°. Feels perfectly well. States that she was washing yesterday. After her day's work she put on more clothing and started to go home, when she became dizzy and fell in the street.

July 5th.—To-day, about 6 P. M., she either fell or threw herself from one of the windows of the ward, on the second floor of the hospital, and striking on stones beneath sustained a fracture of base of skull, from which she died in a few minutes. Since the previous note, 8 A. M., July 2d, she had been improving in health, appetite and strength, and seemed perfectly rational.

Case VII.—Henry G., aged twenty-two years, coal-passer; admitted at 7.30 p. m., August 22d. Patient violently delirious, requiring several men to hold him. The doctor accompanying him says that he had epileptiform convulsions on his way to the hospital. Placed in a strait-jacket, and sol. morph. sulph. (Magendie's) ♏ xviij given subcutaneously. In fifteen minutes he was quiet and sleeping.

10 p. m.—Respiration 14.

10.30 p. m.—Respiration 10. Pupils small. Sleeping quietly.

11 p. m.—Respiration rising. Sleeping quietly.

August 23d.—The patient is now sane, and able to give the following account of himself: Is employed as a stoker on the steamer Helvetia, and is obliged to labor in a very warm place. On Monday he was seized with diarrhœa, accompanied with cramping pains in the abdomen. The diarrhœa persisted till day of admission to hospital, the patient losing appetite and growing weaker. Yesterday morning he attempted to work, but his chiefs stopped him, and sent him to his bunk. He was seized with violent "pinching" pains from head to foot, but worst in his back. His head was giddy, and ached. Later in the day when these pains, which were paroxysmal, came, he "didn't know what he was about." The last thing that he remembers distinctly was his chief giving him a glass of brandy, and he remembers indistinctly being carried somewhere. This morning he feels weak, and sore all over. This soreness is worst in his back. Pupils small; tongue coated; face pale. Slight twitchings of muscles of arms, hands, and thighs. There is hyperæsthesia of trunk, upper extremities, and thighs, not notable elsewhere. Anorexia; no diarrhœa. Tenderness along the spine. Pulse 76; respiration 30; temperature 101½°.

August 24th.—Discharged at his own request. No note made of his condition.

Case VIII.—Patrick C., admitted 6.45 p. m., August 9th. Unconscious. Pupils normal, but soon became small; lips blue; tracheal *râles;* breathing suspirious; no stertor; no

No.	Conscious.	Unconsciou	Epileptifor	Tetanoid, o Tonic.	Delirious.	Normal.	Contracted.	Dilated.	Pulse.	Respiration	Temperatu	Vomiting.	Purging.	Urine.	Stertorous.	Moaning.	Died.	Recovered.	Duration.	REMARKS AND SEQUELÆ.
1	....	1	....	....	....	....	1	....	140	28	107½°	1	....	small quan'y,	....	....	1	....	15 minutes.	....
2	....	1	....	....	....	....	1	....	....	42	106⅙	....	1	no albumen.	1	....	1	....	4 hours.	....
3	....	1	....	....	....	1	....	....	118	24	105½	....	....	......	....	....	....	1	1½ hours.	....
4	....	1	....	....	....	....	....	1	122	36	103¾	1	1	small quan'y,	....	....	....	1	5¼ hours.	....
5	....	1	....	1	....	....	1	....	150	22	110½	....	....	no albumen.	....	1	....	1	10 hours.	Hebetude 2 weeks after.
*6	1	....	....	....	....	....	....	....	104	......	99	1	....	......	....	....	....	....	......	....
7	....	1	....	1	....	....	....	1	....	......	101½	....	1	......	....	1	1	....	7½ hours.	....
8	....	1	....	1	1	....	....	....	....	......	101¾	....	1	......	....	....	....	1	5¾ hours.	....
9	....	1	....	1	....	....	1	....	135	18	99¼	....	1	......	....	1	....	1	......	Died of pneumonia.
†10	1	....	....	....	....	....	....	....	84	28	100	....	....	......	....	....	....	1	......	....
11	....	1	....	....	....	....	1	....	138	20	109½	1	1	small quan'y,	1	....	1	....	16½ hours.	....
12	....	1	....	....	....	....	1	....	156	36	106	1	1	no albumen.	....	1	1	....	5¼ hours.	Was bled before admitted.
13	....	1	....	1	1	....	....	1	106	24	99½	....	....	......	....	....	....	1	1½ hours.	....
‡14	1	....	....	....	1	....	....	....	84	24	99¾	1	....	......	....	....	....	1	......	Pain in head.
15	....	1	....	1	1	....	....	1	152	......	108⅝	....	....	......	....	....	....	1	5¾ hours.	....
16	....	1	1	....	....	1	....	....	152	......	106	....	....	......	....	1	....	1	15 hours.	....
17	....	1	....	1	....	....	....	....	....	......	106	....	....	......	....	....	1	....	6½ hours.	....
18	....	1	1	....	....	1	....	....	128	36	107¼	....	....	......	....	....	....	1	18 hours.	....
19	....	1	1	....	....	....	....	1	168	......	107½	....	....	......	....	....	....	1	1 hour.	....
20	....	1	....	1	....	....	1	....	168	26	107	....	1	......	....	....	....	1	8 hours.	....
21	....	1	....	....	....	....	1	....	120	30	....	....	....	......	....	....	....	1	1 hour.	....
22	....	1	....	1	....	....	....	1	....	......	....	....	....	......	1	....	1	....	14 hours.	....
23	....	1	....	1	....	....	1	....	130	50	106	....	1	......	....	....	....	1	3¼ hours.	....
24	....	1	....	....	....	....	....	....	124	......	109½	....	....	......	....	....	1	....	1½ hours.	....
25	....	1	....	....	....	....	1	....	140	......	107½	1	1	......	....	....	1	....	......	....
26	....	1	....	....	....	....	1	....	120	30	105	....	....	......	....	....	1	....	......	....
27	....	1	....	....	....	....	1	....	140	38	102½	....	1	......	....	....	1	....	3¼ hours.	General weakness, pain in head.
28	1	....	....	....	....	....	....	....	120	20	100	....	....	......	....	....	....	1	......	....
29	....	1	1	....	....	1	....	....	165	36	105½	....	....	small quan'y,	....	....	1	....	7 hours.	....
30	....	1	....	....	....	....	1	...	100	......	104	....	....	no albumen.	....	....	....	1	......	....
31	....	1	....	1	....	....	....	1	....	......	107	1	1	......	....	1	1	....	3 days.	....
32	....	1	....	....	1	....	....	1	140	......	110	1	1	small quan'y,	1	....	1	....	......	....
33	....	....	....	....	1	1	....	....	68	20	100¼	1	....	no albumen.	....	....	....	1	......	General weakness, pain in head, nausea.
34	....	1	....	1	....	....	1	....	148	......	108	1	1	......	....	1	1	....	5 hours.	....
35	....	1	....	....	....	....	1	....	148	......	109	1	....	......	....	1	1	....	25 minutes.	....
36	....	1	....	....	....	....	....	....	148	24	108⅝	....	....	......	....	1	1	....	10 minutes.	....
37	....	1	....	1	....	....	1	....	150	......	108¾	1	1	alkaline.	1	....	1	....	2½ days.	Venesection performed.
38	....	1	1	....	....	....	1	....	....	......	102½§	....	....	negative.	....	....	....	1	12 hours.	Preceded, and followed by hemiplegia, transient.
39	....	1	....	1	....	....	....	1	....	......	105½	....	1	......	....	....	....	1	2 hours.	Dizziness and general weakness.
40	....	1	1	1	....	....	....	1	86	22	102½	....	....	......	....	....	1	....	1 day.	....
41	....	1	....	....	....	....	....	....	152	26	106½	....	1	......	....	1	1	....	3 hrs. 35 min.	....
‖42	....	1	....	....	....	....	1	....	114	28	110½	....	....	......	....	1	1	....	2 hours.	....
43	....	1	....	....	....	....	1	....	124	......	103	....	1	......	....	1	1	....	7 hours.	....
44	....	1	1	....	1	....	....	....	....	......	....	....	....	......	....	....	....	1	12 hours.	....
45	....	....	....	....	....	....	....	....	....	......	....	....	....	......	....	....	....	....	......	....

* Had been sponged, etc., previous to admission. † Sponged on way to hospital. ‡ But afterward delirious. § Afterward 106¼°. ‖ Twitchings.

purging nor vomiting. Violent epileptiform convulsions, succeeding each other rapidly. Urine withdrawn. Acid reaction. No albumen.

7.30 P. M.—Pulse 108. A few convulsive movements only.

8.50.—Pulse 104; respiration 34; temperature 102°. Received an enema, and is now passing much flatus and some watery fæces. Shows some signs of returning consciousness. There is paralysis of right upper and lower extremity.

August 10th.—The patient has entirely recovered consciousness. There is still some paresis of right side. He says that, while at work the day before, he noticed he was losing power in his right arm and leg, having been entirely well up to that moment. He soon became unconscious, and remembers no more.

August 12th.—Is gradually regaining power in right side. The only remaining indication of paralysis is slight uncertainty in the use of right lower extremity. No paralysis of upper. Discharged at his own request.

III.—*Case of Supposed Scurvy in a Nursing Child.* By W. H. Mather, M. D., Suffield, Conn.

In September I was called to see a nursing child, aged nine months, of healthy parents. The child exhibited purple spots over the posterior aspect of both arms and legs. One spot on the left thigh was as large as the palm of my hand. The borders of the spots were yellow, as though the child had been beaten. Indeed, a homœopathic practitioner told the mother that the child had fallen, or had been burned, and that he could do nothing for it. The child's gums were spongy and bleeding. Beneath these spots the tissues had an indurated feel. The mother inquired of me, " What is the matter with my child?" I asked her if she was in the habit of drinking large quantities of tea. "Yes, I drink at all the three meals, and between-meals, and in addition take a bowl at bedtime." This mother had evidently tea-ed her child almost to death. A change of diet was recommended, and in two weeks the child was well.

Gangrene following Amputation in a Man aged eighty-eight; Recovery.—A man, aged eighty-eight years, was struck on the 18th of September by a locomotive, and, after being carried two rods, rolled off the cow-catcher, and was shoved along the rails for thirty feet, when the wheels passed over one foot, crushing foot and ankle, and breaking the fibula. Having been summoned to the case, I amputated at the lower third. Sloughing of the flap ensued during the second and third week, exposing an inch and a half of the tibia posteriorly. Since that time Nature has been rapidly repairing the lost tissues, so that the exposed tibia is half covered, and fresh granulations have formed over the entire stump. Patient's appetite is good, and there is every prospect now, at the expiration of forty days, of a speedy recovery. November 22d, the outer end of tibia having become carious, I removed it with a pair of scissors. The granulating surface is now about an inch in diameter, and healing rapidly. The patient is the oldest man in town. Such a recovery at such an age I am inclined to regard as unique.

Bibliographical and Literary Notes.

Art. I.—*The Physiological and Therapeutical Action of the Bromide of Potassium and Bromide of Ammonium. In Two Parts.* By Edward H. Clark, M. D., and Robert Amory, M. D. Boston: James Campbell, 1872, pp. 178.

The elegant appearance of this little work would invite perusal, aside from the quality of its contents, and we have found the matter to agreeably answer the expectations thus raised.

The first part, on the therapeutical action of the bromides, is the work of Dr. Clark. After a preliminary consideration of the absorption and elimination of the drug, he takes up its action while in the system. In this division he emphasizes a distinction which is of much practical importance to the physician—the different action, namely, of a single (hypnotic) dose, of the continued dose, or of a toxic dose. We do not mean, of course, that this is new doctrine, but we remember nowhere to have seen the distinction so clearly and satisfactorily illustrated. The special applications of the single and continued doses are then taken up, and the indications and rules for their exhibition well expressed. We shall not attempt to comment in detail upon Dr. Clark's essay, but dismiss it with the general remark that, in reading it, the wish often arose in our mind that there were more such "contributions" (as the doctor modestly calls it); for we have long felt that the indifferentism and skepticism so often expressed regarding therapeutics are due less to inefficiency of medicines than want of comprehension of the when and how to use them. Every attempt to place the use of any drug upon a scientific basis is a step toward the time when therapeutics shall regain the preëminence which it should have in the practice of medicine (for the end of medicine is to cure), but from which it has been temporarily displaced by the more actively-growing departments of our science.

The second, the physiological part, by Dr. Amory, is, we think, in essentials, the paper read by him before the Massachusetts Medical Society, in 1869, and which we think we then briefly noticed. Dr. Amory announced five propositions which his experiments are meant to support. Propositions A, B, and C, we think, are fully sustained by his numerous and varied experiments. We have several times reread the experiments upon which Proposition D is based, but we fail to see that it is proved that the loss of reflex action is dependent upon the capillary contraction. We admit the probability that the two phenomena may bear the relation of cause and effect, but we looked for proof, which we think is still wanting. In regard to Proposition E we have about the same opinion, namely, that it is based rather upon high therapeutical probability than upon physiological demonstration. In the statements of some of the quoted experiments there is a little confusion.

While we make these exceptions to Dr. Amory's conclusions, we would not have it understood that we disparage the value of his paper as a whole. On the contrary, it is because of its general excellence that we have taken the trouble to point out what we think flaws in the argument of an observer usually so accurate.

ART. II.—*A Manual of the Diseases of the Eye.* By C. MACNAMARA, Surgeon to the Chandnie and the Ophthalmic Hospital, Calcutta; Professor of Ophthalmic Medicine and Surgery in the Calcutta Medical College. Second edition, 16mo, pp. 620. Philadelphia: Lindsay & Blakiston.

DR. MACNAMARA's work does not profess to be one of original research, but is written mainly for students, to place before them a clear view of the present state of knowledge of the subjects upon which it treats.

The first edition of his book, so near as we know, was published in 1865, in India, and afterward reprinted in London. That it was favorably received is evidenced by the appearance of a second edition. This edition is very much enlarged, containing nearly twice as many pages as the first one.

Chapter I. contains a brief account of the anatomy of the eye, and the mechanism of accommodation. In this chapter the author objects to the current view of the mechanism of the accommodation, which is, that it is effected by the ciliary muscle. It seems to him that the increase in the anterior convexity of the lens, in the act of accommodation by the action of this muscle, has not been demonstrated. It appears more probable to him that these minute and rapid changes are brought about through some power of changing its form inherent in the lens itself, rather than that a band of unstriped muscle, situated at some distance from the lens, and which can only act on it through some intermediate structure, should induce them. Moreover, there are difficulties in the way of the generally-received doctrine.

The ciliary muscle is composed of unstriped fibre, which is not usually under the control of the will; it can only act through the suspensory ligament, which is reflected from the ciliary body to the anterior surface of the capsule of the lens; consequently, if the bulk of the ciliary body were to increase or diminish, the tension of the suspensory ligament should vary in a corresponding degree, and with it the accommodation of the eye, provided this process be dependent on the tension or relaxation of the suspensory ligament.

Again, the ciliary muscle may be divided and the accommodation of the eye continue, in working order. Lastly, the whole of the iris has been torn away from its attachment, and the ciliary muscle, therefore, probably damaged, and yet the alteration in the curvature of the lens has gone on as actively as ever; proving not only that so rude an injury does not destroy the accommodation of the eye as long as the lens remains *in situ*, but, further, that these changes do not depend on the pressure exerted on the iris by the lens, as was at one time supposed. In connection with these facts the author has made some investigations into the minute anatomy of the primitive muscular fibre, and also of the fibres of the lens, which appear to establish a structural analogy between them, and which have forced him to the conviction that the lens itself is composed of contractile tissue, and that the complex arrangement of its fibres is in some way (how, it does not say) subservient to the alteration in the curvature of its surface which occurs in the act of accommodation.

In the absence of direct demonstration as to the mode in which the contractile fibres of the lens produce change in its curvature, the theory of Donders, that accommodation is brought about by the contraction of this little muscle, seems to us much the more rational view. It would be out of place here to enter into the elaborate arguments of Donders in proof of this theory. He admits, however, that, while the question has been reduced to a small compass, it has not, as yet, been definitely determined by what mechanism the action of the muscle alters the form of the lens. His views are accepted, however, by the highest authorities of the day, as the nearest approach to positive demonstration. Chapter II. contains some valuable descriptions and drawings of the normal appearances of the fundus oculi in the natives of India. The fundus oculi among the natives of India is very different from that which is presented among Europeans.

The contrast between the color of fundus in the two races is shown in two well-executed chromos—Fig. 1, Pl. iv., and Fig. 2, Pl. iv. "This difference arises from the deep-brown or black pigment which fills the hexagonal cells of the choroid in the native, and obscures the vascular structure, so that the fundus of the eye appears of brownish-gray color; whereas in the European the incident-light being reflected principally from the vascular net-work of the choroid, it is of a *crimson-orange* hue. The precise tint must, of course, vary in each individual, depending upon the depth of coloring of the pigment contained in the hexagonal and choroidal cells.

These appearances of the color of the fundus may resemble the deep-red color of the European; but this, according to the author, depends upon congestion of the retina, and destruction of the hexagonal cells, so that a certain amount of light is reflected from the choroid. In such cases other circumstances would enable us to determine the nature of the disease.

We now pass by several chapters, with the general remark that they are excellent and concise upon the different topics of which they treat, to the chapter on conjunctival diseases. With regard to the form of caustic to be used in the treatment of purulent conjunctivitis, the author recommends the use of mitigated pencil of nitrate of silver, which is composed of equal parts of nitrate of silver and nitrate of potash, or one part of the former and two of the latter. We venture to say that the use of nitrate of silver in this form is objectionable, and cannot be long continued without scarring the conjunctiva. The use of solutions of nitrate of silver in our hands has been far more satisfactory, and it is rarely necessary to use a stronger one than ten grains to the ounce, while in the milder cases a five-grain solution is strong enough. Diphtheritic conjunctivitis, we are told, is a comparatively rare form of disease in India.

In the chapter on diseases of the iris, among the causes of inflammations of this structure, the interesting observation is made that in nearly all advanced cases of leprosy plastic iritis is present.

In speaking of the treatment of iritis, the author says: "As a general rule, it may be affirmed that mercury is never to be employed in iritis except in cases arising from syphilis; in other cases this drug is useless, and in very many positively injurious."

This statement does not accord with our experience, which is, that in nearly all cases of plastic iritis, whether of syphilitic origin or not, mercury is a very useful agent.

Its judicious use, in our opinion, in some form or other, is necessary in all cases where the iris is not readily dilated by atropine, and we would employ it in all such cases after trying the atropine alone for twenty-four hours. In many cases it is not necessary to carry its use so far as even to affect the gums, before the synechiæ give way. In the treatment of iritis, the indication of the greatest importance is to effect recovery without leaving behind any attachment of the iris, which always renders the eye subject to recurrences of inflammation. And this, we are sure, can best be accomplished by the use of mercury. We would differ so far from the rule laid down by Dr. Macnamara, then, as to say, as a general rule, it may be affirmed that mercury ought to be employed in nearly all cases of iritis, whether of syphilitic origin or not.

On page 350, under the head of foreign bodies in the anterior chamber, mention is made of the occurrence of *filaria papillosa* in the anterior chamber of the human eye.

The author has published two such cases in the sixteenth number of the *Indian Annals.* "There is no possibility of mistaking the appearance presented by entozoa of this kind in the anterior chamber; the creature may be distinctly seen moving about in the aqueous. Entozoa in this situation excite violent inflammation of the iris and cornea, and probably abscesses of the eyeball, unless they be allowed to escape from the eye. This may usually be effected without difficulty by puncturing the cornea with a narrow-bladed knife, which is to be rotated edgeways as it is withdrawn from the eye, allowing the aqueous to escape with a gush and with it the entozoon. Filaria are very frequently seen in the eye of the horse in many parts of India."

In speaking of the etiology of retinitis pigmentosa, the statement is made that the view, that this disease is to be commonly met with among the offspring of persons nearly related to one another by marriage, has not been borne out in his experience. In India, the natives are most scrupulous in observing the restrictions they place upon the intermarriage of relatives; and yet Dr. Macnamara says: "I have seen some twelve or fifteen instances of the disease among my native patients within the last twelve months."

There are many other points in Dr. Macnamara's book worth speaking of, did space and time permit.

The book is, on the whole, a good one, and a pleasing evidence of scientific activity in India. While it is written, mainly, as a condensed manual for the students of his college, it cannot fail to interest the general reader. The marginal notes on the contents of the paragraphs serve to greatly facilitate reference.

It is to be regretted that the printers have not done their work as well as Dr. Macnamara has his. The book is poorly printed; in fact, for difficulty of reading, it will compare favorably with the print of some of our daily papers.

Books and Pamphlets Received.—The Dangers of Chloroform, and the Safety and Efficiency of Ether, as an Agent in securing the Avoidance of Pain in Surgical Operations. By J. Morgan, M. D., F. R. C. S., etc. With a Description of an Ether-Inhaler, and the Mode of Administration. London: Baillière, Tindall & Cox, 1872, pp. 45.

The Use of the Section in the Treatment of some Cases of Chronic Affections of the Womb. By Ely Van de Warker, M. D., Physician for Diseases of Women to the Syracuse Free Dispensary. Reprinted from the *Journal of Obstetrics.* New York: J. Ross & Co., 1872.

Modern Medicine: A Lecture delivered October 7, 1872. Introductory to the Course at the Jefferson Medical College. By John Da Costa, M. D., Professor of the Principles and Practice of Medicine. Philadelphia: J. B. Lippincott & Co., 1872.

The Earth a Great Magnet: A Lecture delivered before the Yale Scientific Club, February 14, 1872. By Alfred M. Mayer, Ph. D. New Haven: Charles C. Chatfield & Co., 1872, pp. 284.

Consumption, and the Air rebreathed: a Word with Reviewers. By Henry MacCormac, M.D. London: Longmans, Green & Co., 1872.

Annual Report of the Surgeon-General United States Army, 1872.

Translations.

Prepared for the NEW YORK MEDICAL JOURNAL by ALFRED E. WALKER, M. D.

Chloral Hydrate to restore Blood-Corpuscles.—Prof. Filippo Pacini prepares suspected blood-stains for the microscope by immersing the matter in a solution of chloral hydrate (one part to ten of water). The corpuscles are softened without disintegration.—*Nuova Liguria Medica.*

Galvano-Acupuncture for Aortic Aneurism. — Prof. E. De Renzi reports a case thus treated, and reviews the records of other cases. In his own case the battery used was one of twenty-one elements; the zinc plates four to five centimetres broad, by eight long, immersed about half their length. The index stood at sixty when the circuit was open, at twenty when it was closed. Six needles were inserted, and each pole was attached for five minutes to each needle, so that the whole operation lasted an hour. On the seventh day the man died of rupture of the sac. An autopsy showed no trace of any clot near the points where the needles had entered, but some evidence of inflammation. The conclusions to which Prof. De Renzi is led, by his review of Ciniselli's cases and others, are—1. That no case is known of a complete and permanent cure of aortic aneurism by galvano-acupuncture; 2. That the cases of apparent cure are more readily explained by the irregular course of the disease, and the effects of quiet and good hygienic influences; 3. That the operation is harmless in itself, but may be the indirect cause of mischief by inducing changes in the walls of the sac, rendering them more liable to burst.—*Nuova Liguria Medica.*

Syphilitic Onychia treated with Acid Nitrate of Mercury.—Prof. G. Di Lorenzo finds that this painful affection, though it does not yield to the ordinary anti-syphilitic treatment, and often persists after other venereal symptoms have disappeared, is easily subdued by cauterizing with the acid mentioned above. He thinks his success may be due to a mercurial action of the remedy, but that, on the other hand, it is possibly attributable to his method of applying the caustic. He uses a small camel's-hair pencil, and moistens only the tip of it in the acid, remoistening it several times during the operation rather than to take up much acid at once. In this way he limits the caustic action to the bottom of the sulcus at the root of the nail, and avoids unnecessary destruction or inflammation of the adjacent tissues. He anæsthetizes the finger previously, and applies cold compresses afterward. The pain soon passes away. A tenacious eschar is left which excludes the air, and, when this falls off, the matrix of the nail is healthy, and capable of producing a perfect nail.—*Giornale Italiano delle Malattie Veneree e delle Pelle.*

Predisposing Causes of Tinea Capitis.—C. Lombroso, having studied the distribution of tinea capitis through the different provinces of Italy, enumerates the following predisposing causes of the malady: 1. Heat of climate; 2. Scarcity of water; 3. Distance from the sea; 4. Low grade of civilization; and 5. A superstitious belief, which prevails in some districts, that the disease is a good thing to have.—*Giornale Italiano delle Malattie Veneree e delle Pelle.*

A Constant Galvanic Current.—Dr. L. Ciniselli urges the use of a single pair of zinc and copper plates, connected by a flexible coupling, to be applied to the skin directly or over a layer of cloth moistened with vinegar, as the only means of keeping up a mild, constant current for a long time without inconvenience. The injurious effect upon the skin may be counteracted by changing the position of the plates, putting the zinc in the place of the copper, and the copper in the place of the zinc. He reports cases of remarkable success with inveterate neuralgias.—*Gazetta Medica Italiana-Lombardia.*

Cerebral Paresia treated with Phosphorus.—Dr. G. Tempini attributes this disease to an excessive waste of protagone ($C^{212}H^{240}N^{4}PhO^{44}$), generally the result of over-use of the cerebral or reproductive function. He prescribes five centigrammes of phosphorus, to be dissolved in some ether and mixed with enough powder and extract of licorice to make a mass, which may be divided into fifty pills of twenty to twenty-five centigrammes each. Of these he gives at first one a day, increasing gradually to five a day. The limit of toleration of the remedy is often indicated by frequent alvine discharges. Meat and eggs are useful, for the phosphorus contained in them. Wine, coffee, and cold douches to head, serve as valuable stimulants. The author also recommends mild mental gymnastics, and furnishes an example of what many would call by that name, in an argument to prove that a man is not necessarily a materialist who seeks to cure cerebral paresis by physical remedies.—*Gazetta Medica Italiana-Lombardia.*

Miscellany.

A New Medical Journal.—*The Archives of Scientific and Practical Medicine* is the somewhat cumbrous title of a monthly journal announced by Messrs. J. B. Lippincott & Co., of Philadelphia. Drs. Brown-Séquard and E. C. Sequin are to be the editors, and the publication is to begin with the present month. We learn from the prospectus that "purely controversial and editorial articles, proceedings of societies, and news, will be altogether excluded." The annual subscription price will be four dollars.

The Central New York Medical Journal.—It is proposed by Dr. Ely Van de Warker, of Syracuse, to issue a monthly periodical under the above title, and to make it the official organ of the Medical Association of Central New York. The proposed journal will contain thirty-two or more pages of reading-matter, and will cost three dollars per annum. The work will be undertaken on the guarantee of three hundred subscribers.

Diseases of the Throat.—The Manhattan Eye and Ear Hospital has recently added a Department for Diseases of the Throat, under the charge of Dr. Andrew H. Smith. The cliniques are held at the hospital, No. 233 East Thirty-fourth Street, on Tuesdays, Thursdays, and Saturdays, at 2 P. M.

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Original Communications.

ART. I.—*The Physiology and Psychology of Dreams.* By JAMES J. O'DEA, M. D., Clifton, Staten Island.

THE PSYCHOLOGY OF DREAMS.

> "The mind resembles a loom; every event is an impulse which sets it in action, and the fabric which issues from it, transcribes by its structure the order and kind of the impulses which the machine has received."—TAINE, "Intelligence," p. 363.

As we observed in a preceding paper,[1] the sources of dreams are the conscious and unconscious impressions of the waking state, whether proceeding from ourselves or from the surrounding medium. These impressions are registered in the mind as images. In sleep, these images revive with various degrees of intensity, undergo many transformations, are strung together according to certain methods of association to be noticed hereafter, and thus constitute the fabric of our dreams.

Once the train of images constituting a dream is started, it continues by an automatic action independent of volitions, receiving, as it develops, various modifications, as regards direction, plot, and action, from the numerous influences which stream through the imperfectly closed senses, or the organs supplied by the sympathetic, to the gray matter of the cerebrum.

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[1] *See* JOURNAL OF PSYCHOLOGICAL MEDICINE, for October, 1872.

Our dreams, therefore, reflect what we have seen, felt, desired, or accomplished. These are their constituent elements, although the integrated result, the dream, is, in the majority of instances, so unlike them, that it requires some study, and a little analytical skill, to unravel its complicated web, and demonstrate the continuity of each thread with the events of every-day life.

Examples in abundance might be adduced to prove, were it at all necessary, that the source of all dreaming lies in the experiences of the waking state. Our dreams change to suit the modified circumstances of our lives. They are not the same in sickness as in health, in youth as in mature life. Unfortunates, who have been stricken with blindness, cease, after a little while, to dream of objects of sight.[1] Casper Hauser never dreamed till he had gained knowledge through private tuition and the intercourse of polite society.[2] "Virtuous thoughts of the day lay up good treasures for the night," says old Sir Thomas Browne, in his exquisite way—an expression, however, which is only partly true, for the holiest anchorites of the desert have had their spirits sorely troubled, in dreams, by wanton fancies proceeding from the rebellious flesh.

"If a man," says De Quincey, "whose talk is of oxen, should become an opium-eater, the probability is that (if he is not too dull to dream at all) he will dream about oxen; whereas, in the case before him, the reader will find that the opium-eater boasteth himself to be a philosopher; and, accordingly, that the phantasmagoria of his dreams (waking or sleeping, day-dreams or night-dreams), is suitable to one who, in that character,

> 'Humani nihil, a se alienum putat.'"

How happens it, then, if the dream be always a reproduction of our waking experiences, that it commonly bears so indistinct a resemblance to them? How is it that the integrated dream is so unlike those events of our waking state, of which it is, in some form or other, the echo? The question now asked will receive its proper answer as we proceed in the psychological analysis of the state of dreaming. This analysis will consist in an examination of the following points:

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[1] Maury, "Le Sommeil," etc., p. 39.

[2] Dendy, "Philosophy of Mystery."

1. The unequal activity of the mental faculties in dreams.
2. The manner of the revival of images in dreams.
3. The method of association of ideas observed in dreaming.

1. The molecular condition of the gray matter of the cerebrum—the seat of the mental faculties—in sleep, has already been explained. Briefly, it is this: Some parts of it, exhausted by the efforts of the day, sink to rest; others, whose resources have not been overtaxed, preserve an amount of functional activity proportionate to their degree of integrity. Here we have the physical basis of the observed inequality of the mental faculties in sleep. Only such parts of the cerebral cells as retain some vigor dream; all others, being exhausted, sleep profoundly. Similarly, the mental powers, most fatigued by the day's occupations, judgment particularly, sleep. Dreams, indeed, have been defined, and not inaptly, "a want of balance between the representative faculty and the judgment."[1] The other mental powers, whose exercise does not entail the same fatigue, are awake in various degrees, and dream. There is, undoubtedly, such a state as dreamless sleep, because, though there is, probably, not a moment, even in the profoundest sleep, during which molecular action wholly ceases in the cerebral cells, it may be too feeble, or too limited in area, to make itself evident in images, and consequently to excite dreams.

That the various faculties of the mind, judgment, will, memory, imagination, etc., are not equally benumbed or stilled by sleep, is a fact familiar to all who have attentively considered the phenomena of dreams. M. Maury, to whom, after Cabanis, we are chiefly indebted for a full appreciation of this fact, has applied it with great success in his explanations of many of the apparent anomalies of dreams. We will give a few of his examples, supplementing them with illustrations from other sources, and with such observations as may seem appropriate.

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[1] Dendy, "Philosophy of Mystery," p. 224. New York.

It sometimes happens that, when the form of a well-known friend arises in a dream, we utterly fail to remember his name. Imagination is here active, but memory is suppressed.

Dr. Abercrombie instances the not uncommon case of a clergyman, in dreaming that he is about to preach his sermon, forgetting all about his text. He explains this fact partly on the asserted absence of volitional power in dreams, partly on the peculiarities of the association of ideas in the same state. He supposes that "in the chain of ideas passing through the mind, the church and prayer-book had come up, but then had led off into some other train, and not into that of actually going on with the service; while, at the same time, there arose in the mind a kind of impression that, under the circumstances, it ought to have been gone on with."[1] This explanation, however, is rather labored. The inability to find the text is easier accounted for on the theory of the unequal activity of the mental faculties in dreams.

At times, owing to abnormal excitement in the centres of sensation, the impressions transmitted to the brain are twisted, distorted, or greatly exaggerated, so that there is attributed to them an intensity, or other unusual character, which they do not themselves possess. In this case, one of the higher mental faculties, ideational perception—the power of re-presentation—is wanting.

Again, we are often rapt spectators of, or actual participators in, imaginary events of a wholly impossible nature, without being at all struck by their extraordinary character. We hold intercourse with the dead, we perform impossible feats of strength and agility, we make journeys of great lengths in an incredibly short time. Situations like these denote the absence of the faculties of comparison and judgment. A dream related by M. Taine, in his very clever work on "Intelligence," affords an excellent example of facts of this character:

"It happened," he says, "in a drawing-room I like very much; I saw distinctly the principal guests; their dress, their attitudes. I spoke to them, the scene was long, and the impression so clear that, a quarter of an hour after, I could have described it with every detail." He dreamt that in this room, before all the company, he quietly drew off his boots and placed them on the mantel-piece behind the clock! On first awaking he felt astounded at such frightful ill-breeding, but, soon, a vague recollection of his previous actions rose up and came into opposition with his dream; this recollection brought on others: "The lines of the past were reformed, and, at the same time and in the same degree the absurdity I had dreamt of, finding no standing-room, disappeared and evaporated. Then came this judgment, based on general ideas: 'It is a dream.'" And it will be observed that he was only able to pronounce it to be a dream when his faculties of comparing and judging were fully roused.

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[1] "Inquiries concerning the Intellectual Powers," p. 236. New York.

The conspicuous absence of the moral sense, in many dreams, may be in part explained on the same ground. Taine felt no shame at his astonishing violation of the commonest rules of propriety in drawing off his boots in company, and placing them on the mantel-piece, simply because he had not the power of comparing his present with his past self, or of reflecting on the proprieties due to the occasion.

Often we are tempted to do wrong or absurd things in our full waking state, but refrain because shocked by their inconsistency with the whole tenor of our lives. But in a dream we have none of this power of "looking before and after," the present alone bounds the horizon of our mental vision, it alone, with all its emotions, is real, however absurd or wrong it may afterward appear, when, on awaking, we compare it with the actual past.[1] Hence it is that conscience does not accuse us in dreams of the acts we then commit. People have felt themselves morally revolutionized in dreams, have committed acts which, in their waking state, they would shudder to think of.

"An admirable and most kind-hearted lady informs me," says Miss Cobb, "that she palmed off a bad sixpence on a beggar and chuckled at the notion of his disappointment. A distinguished philanthropist, exercising for many years high judicial functions, continually commits forgery, and only regrets the act when he learns that he is to be hanged. . . . One of the most benevolent of men, who shared not at all in the military enthusiasm of his warlike brothers (the late Mr. Richard Napier), ran his best friend through the body, and ever after recalled the extreme gratification he had experienced on seeing the point of his sword come out through the shoulders of his beloved companion."[1]

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[1] This absence of self-consciousness—on its intellectual side, the reviewing faculty by which we summarize our past states and compare them with our present, on its ethical side, conscience—is a significant phenomenon in dreams and insanity. We regret that space will not allow us to more than notice it here and there throughout this article.

There are many examples, it is true, of persons haunted in dreams by vague yet distressing feelings of conscience. Criminals often feel them. The murderer is pursued even into his sleep by the relentless accusations of his better sense. Lady Macbeth was thus haunted. But we must carefully distinguish such cases from those previously mentioned. The assaults of conscience experienced by criminals in their dreams are merely reproductions of what they have already felt, much more keenly, it may be, in the daytime. They are mere images, therefore, of the actual past, and just as apt to be repeated in dreams as any other of the images of our sensations. When the act is imagined for the first time in a dream, it is seldom accompanied by any image of its immorality. The immorality of a dream is only such when viewed from the waking state, just as the incongruity of Taine's conduct in the *salon* was only such to him when he had reflected upon it afterward. So much for the absence of the moral sense; now let us return to what we were saying in reference to the unequal activity of the intellectual faculties in dreaming.

It often happens, if the dream was very vivid, that we continue to believe in its reality for a little while after awaking. Comparison and judgment, however, soon dispel the delusion, all the more rapidly in proportion to its uncongenial nature. It vanishes because, recalling our past states of consciousness, we compare them with the events pictured in our dream, and thus arrive at a knowledge of their unreality.

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[1] "Dreams as Examples of Unconscious Cerebration."—*Macmillan's Magazine*, 1871.

The next step is to expel them from the record of our real lives as mere fantasies of the brain with which volition has had nothing to do, and for which, therefore, we do not hold ourselves responsible. When the dream, though vivid, has, on the other hand, nothing inconsistent with our waking consciousness, we may be impressed, for some time, with a belief in its reality. Of this the following is a good illustration: "M. Baillarger dreamed one night that a certain person had been appointed editor of a newspaper; in the morning he believed it to be true, and mentioned it to several persons who were interested to hear it; the effect of the dream persisted all the forenoon, as strongly as that of a real sensation; at last, about three o'clock, the illusion passed off; he comprehended that he had been dreaming."[1]

Occasionally we are unable in dreams to represent to ourselves familiar images, to combine these into definite ideas; or we are powerless to will acts which we greatly desire; examples of the suspension of will and imagination.

The question of the exercise of will in dreams has given rise to considerable differences of opinion. Some, with Stewart,[2] maintain that the faculty of willing remains intact, the influence of the will on thought and action being alone suspended. We are frightened by a terrible dream, and we wish to call to some one for assistance, but we find ourselves powerless to do so. Here, it is said, is an example of the wish to call being present, but the power to carry it out suspended. To the observations of Stewart, Mr. Mansell[3] has replied that they do not "sufficiently distinguish between merely *spontaneous* acts and those which may properly be called *voluntary*," and the criterion of a voluntary act he lays down as follows: "We are conscious in a dream of making an effort; but we are not conscious at the moment that it is in our power not to make it." The criterion does not stand, however, when it is shown that in our waking state all that we are really conscious of is the state of being compounded of the wish to act and the consequent action. Unless in the stage of deliberation which precedes volition, and in which the motives for actions are weighed against those that oppose them, we are not conscious of a power not to act. We are conscious of the wish to act and of the consequent action, and this is all. On the whole, though believing Stewart to be nearer the truth than his opponent, we hold with Messrs. Maury and Lelut[1] that the will, like the other intellectual faculties above noticed, is strongly or feebly developed in dreams according to the condition of the dreamer.

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[1] Taine, "Intelligence," p. 64.

[2] "Elements of the Philosophy of the Human Mind."

[3] "Metaphysics," p. 158, *note*. New York.

The state of the mind, therefore, in dreams, is not uniform. Some of its so-called powers or faculties are active, others are passive. Like the stars in the visible heavens, one sinks while another rises, and each has its periodic oscillations of clearness or brilliancy, due to the varying condition of the brain of the dreamer. This varying state of the mind, as a whole, or of each of its several faculties, is based on a parallel variation in the action of the gray matter of the brain, portions of which have their molecules in a state of excitement, while those of other parts are quiescent. When the molecular changes of the foci of excitement are active, the dream is vivid and rapid; when several of these foci are coördinated, it is well-connected; when this coördination does not obtain, it is confused and fragmentary. This varying state of activity in the cerebral cells gives some dream-images greater prominence than others. They flash out unsupported by contiguous images, which, though present, occupy a position whence they are but dimly revealed to consciousness, like as at sunset when prominent objects—tall trees, and the bare masts of ships—stand out against the crimson sky, while others in the background lose their distinctive outlines in the deepening gloom.

But, not only does this theory explain the failures and imperfections of dreams, it equally accounts for the rare instances in which the dreamer's mental faculties accomplish surprisingly complete results. For if, as M. Maury says, the sensory centres and secondary intellectual faculties alone are asleep—will, judgment, memory, and imagination, being awake—the images of a dream may be arranged in their proper order, or developed in a logical way, and the dreamer may compose speeches, verses, or music, weave a tale, like Coleridge, or perhaps, like Burdach, make a scientific discovery.

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[1] "Physiologie de la Pensée," tome ii., p. 453.

Cabanis[1] knew a man of rare wisdom and enlightenment who believed he had frequently received instruction in his sleep concerning the issues of questions which had perplexed him while awake; he tells us, also, that Condillac often completed tasks in his dreams which fatigue had compelled him to abandon for needful rest. Condorcet has added the testimony of his personal experience to the same effect. Often after mental fatigue had forced him to leave some difficult calculation in an incomplete state, he has seen in his dreams the remaining steps of the problem, even to its final solution. Dr. Franklin drew conclusions in his dreams as to the bearings of political events, which were confirmed by the result, and "Dr. Gregory mentions that thoughts which sometimes occurred to him in dreams, and even the particular expressions in which they were conveyed, appeared to him afterward when awake, so just in point of reasoning, and so good in point of language, that he has used them in his college lectures, and in his written lucubrations."[2] And, finally, the writer, in a dream-argument on the qualifications necessary to entitle persons to belong to a social aristocracy, defined the latter to be "a class having wealth and leisure for self-culture"—by no means an absurd or slovenly definition for a sleeping brain.

2. We come now to a phenomenon of great interest—the spontaneous revival of forgotten impressions in dreams. M. Maury narrates that one day the word "Mussidan" unaccountably occurred to him and caused him considerable perplexity, for, though aware that it was a town in France, he could not remember its place on the map. Not many nights after, he had a dream in which he was visited by a stranger, who announced that he had just arrived from Mussidan. On being questioned as to the situation of the place, he replied that it was an important town of a district of the department of Dordogne. When he awoke, he consulted a geographical dictionary and found, to his great surprise, that the information was correct. A well-known story told by Abernethy is an equally good illus-

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[1] "Rapports du Physique et du Morale de l'Homme," p. 500.

[2] Abercrombie, "Intellectual Powers."

tration of the spontaneous revival of memory in dreams. A bank-teller in Glasgow "was at his place at the teller's table where money is paid, when a person entered demanding payment of a sum of six pounds. There were several people waiting who were in turn entitled to be attended to before him; but he was extremely impatient and rather noisy; and being, besides, a remarkable stammerer, he became so annoying that another gentleman requested my friend to pay him his money, and get rid of him. He did so accordingly, but with an expression of impatience at being obliged to attend to him before his turn, and thought no more of the transaction. At the end of the year, which was eight or nine months after, the books of the bank could not be made to balance, the deficiency being exactly six pounds. Several days and nights had been spent in endeavoring to discover the error, but without success; when, at last, my friend returned home much fatigued and went to bed. He dreamed of being in his place at the bank—and the whole transaction with the stammerer, as now detailed, passed before him in all its particulars. He awoke under the full impression that the dream was to lead him to a discovery of what he was so anxiously in search of; and, on examination, soon discovered that the sum paid to this person in the manner now mentioned had been neglected to be inserted in the book of interests, and that it exactly accounted for the error in the balance."[1] Facts such as these some writers have attempted to explain on the theory of "Unconscious Cerebration"—an ill-chosen name, in our opinion, since it is by no means proved that we are ever wholly unconscious of the automatic action of the brain on which these phenomena depend. Miss Cobb, one of the latest and most able exponents of this theory, begins her article on "Unconscious Cerebration," already referred to, by dividing actions, with reference to the will, into three classes—involuntary, voluntary, and volitional. She defines the difference between the two latter to be "that voluntary motions are made by permission of the will, and can be immediately stopped by its exertion, but do not require its conscious activity. Volitional motions, on the contrary, require the direct exertion of the will." Something might be said regarding the needlessness of this distinction. We do not say "we will a voluntary motion," but "we will a motion," nor "we will a volitional motion," but again, "we will a motion," the words voluntary and volitional being used synonymously to qualify motion and to distinguish it from motion that is reflex. A little attentive consideration will convince any one that every voluntary act has, for its antecedent, an exercise of will, and that its voluntary character consists in its being the immediate result of a will or wish to act. Even granting the supposed theoretical distinction between voluntary and volitional acts, they are yet found to be one in fact, for both are started by the will and can be stopped by it, and all require the more or less attentive exercise of will until they become habitual, upon which, once started, they can be carried on in many cases independent of it altogether. Voluntary acts are those which Miss Cobb believes to be effected by "unconscious cerebration." She classifies under this heading all such facts as the sudden recollection of a word when we are least thinking of it, and for which we had vainly searched before, the discovery of mislaid articles in dreams, the solution of difficult problems, the composition of pieces of poetry, of essays and tales, and other such surprising feats of mind in sleep. For example, there is the case of the three proper names, each accompanied by the name of a town in France, which recurred to Maury without his knowing why. "One day," he says, "I came across an old newspaper, and commenced to read it for want of any thing better to do. Among the advertisements I saw one of a depot of mineral waters, with the names of the druggists who sold them in the principal towns of France. There I found my three unknown names, with those of the three towns with which they were connected in my mind. All was explained; my memory, which is excellent for words, had preserved a recollection of these associated names, on which my eyes must have rested while I was looking (as had happened about two months previously) for the address of a depot of mineral waters. But the circumstance had gone out of my mind, without the recollection being wholly effaced. Now, certainly, I could not have paid much attention in so rapid a glance." There is, again, the instance of the bank manager who missed the key of the safes and desks of the bank, and who, after ascertaining that his assistant did not know any thing about it, was so confident that it had been stolen or lost, and would probably fall into the hands of some one who, with its assistance, would rob the bank, that he employed a detective and had him watching for several days the movements of his employés, and who, the next morning after a good night's rest, found it where he then remembered he had put it himself. There is, finally, the case of the lawyer who, sorely puzzled as to how he should render a very difficult opinion, had a dream in which just what he should say flashed into his mind, and he awoke in the morning exclaiming that he would give any thing if he could remember what that opinion was. "Go and look on your table," said his wife. He went, and there found the identical opinion of his dream written out in his own handwriting.

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[1] "Intellectual Powers," pp. 220, 221. New York.

Now, all these are examples, say some, of "unconscious cerebration." And when they have said this, they believe they have explained the whole matter. But, in our opinion, there is no such thing as *unconscious* cerebration; there may be, and there actually is, automatic or non-volitional cerebration, but this is not carried on unconsciously. To be unconscious of our mental states means really to have none in a state of activity, and, if the lawyer had been unconscious of the images that were going through his mind in his somnambulistic dream when he wrote out the opinion, he would not have been able to write it. It is true he had no recollection either of his thoughts or of his act when he awoke. But, to have no recollection of something we have done, and to be unconscious of it while we are doing it, are two widely different things. Besides, it is a usual thing to forget the images of our dreams, and the rule, with very rare exceptions indeed, with the somnambulist, to have no remembrance of his somnambulistic state when he awakes. Whatever the physiological circumstances which modify memory, it is certain that they differ in the sleeping and waking states. The condition of the cerebral circulation has doubtless something to do with it. Many of the images which haunt us in the delirium of fever wholly escape from us the moment it is over, and a story is told of a porter who in one of his sprees left a parcel at the wrong door, and only remembered the place when he got drunk again!

There are, it is true, various degrees of conscious cerebration shading off from full consciousness to that hazy, dim state which borders on absolute unconsciousness, just as the eye may perceive clearly the objects in the centre of vision, less clearly those immediately encircling it, very dimly such as are still outside, and is totally unaware of the great world beyond all these. Such is also the case with our minds, whose constant state is, according to the excellent observations of M. Taine, "a dominant image, in the full light, and, extending around it, a constellation of fading images, growing more and more imperceptible; beyond these a milky-way of images wholly invisible, of which we have no other consciousness than by the effect of their mass, that is to say, by our general feelings of gayety or sadness. Every image may pass through all the different states of light and dimness; at a certain limit it escapes from consciousness, but it is not therefore extinguished, and we do not know to what degree of obliteration it may possibly descend." And again: "By the side of ordinary images and ideas are their collaterals, I mean the latent images and ideas, which must take their turn of preponderance and ascendency in order to reach consciousness."[1]

But though, if we have active mental states at all, we must be conscious of them, there are passive or latent mental states of which we must be unconscious. To say, now, that when these latter revive we are unconscious of them—that we recognize neither their existence nor the sentiments and feelings they assuredly awaken in us—is to declare what is a contradiction on its very face.

Images may, therefore, lie in our minds in a latent state without our being conscious of their existence, but the moment they begin to pass into active states we become conscious, not only of their presence, but of the various emotions and feelings which they excite within us. And, in truth, every one is conscious of the visions of his dreams. We are not, in the great majority of cases, conscious that they are dreams, but we are inwardly affected by them, so much so, sometimes, as to retain a painful recollection of them for some time after awaking.

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[1] Taine, "Intelligence," pp. 169, 171. See the whole of chap. i., Book iv., "Of the Functions of the Nervous Centres."

To resume now the thread of our observations on the revival of forgotten impressions in dreams, the two examples above cited—those of Maury's dream about Mussidan and of the bank-teller—are instances of the revival, under such favoring circumstances as are afforded by sleep, of images of former sensations. In the example of the dream about Mussidan, Maury knew at one time where that place was, but had forgotten, that is to say, had lost the power of reviving the impression by an effort of will, because the bond uniting it to other continuous or contiguous states of consciousness had been so weakened by disease that it could not be stimulated by association. But in sleep the vigor of this bond was renewed, and when the image of the place arose, other images, fixing its importance and position, arose with it, and thus his knowledge was recalled. And so it was also with the dream of the bank-teller.

There is another point in Maury's dream which calls for explanation. We must account for the fact that the information which he acquired was referred to the apparition of the stranger, and actually accepted from it as knowledge then for the first time imparted. What we have to explain is, first, the apparent externality of the figure; and, secondly, the belief that the information came primarily from it. We may premise that we have no doubt the apparition was the revived image of some person he had seen before. Now, an impression made by an external object on a nerve of sense—say, the retinal expansion of the optic—is transmitted to the centre of the visual function, and there stamps a sensation of the object seen. Immediately this is followed by a perception or consciousness of the object, which perception or consciousness embraces the following parts: It is a specific object, and it is external, i. e., foreign to the body which it impresses, and to the mind which takes cognizance of it. Every object of sense will impress these conditions on the mind. Consequently, if we suppose that Maury must at some time have seen the stranger who corresponded to the apparition of his dream, his person would have excited in him these mental states, and immediately thereafter his image would be stamped upon his mind. This image has the following properties: It is derived directly from the world of sense, it remains after the sensation has ceased, registered in the vesicular portion of the cerebrum, and is spontaneously revivable at any subsequent time. Now, according to a well-known fact regarding the nervous system, revived images are always referred by the centres of sensation to the peripheral, or outer, extremity of the nerve, which was originally affected by the actual object itself. If the image be one of form and color, it will be referred to the peripheral extremity of the optic nerve, the retina, and appear as an external figure. The apparitions of dreams are merely the reproductions of such impressions. They are images stamped on the brain by actual sensations, though often temporarily overlaid by deposits of newer images constantly pouring in through the senses from the busy external world. When the senses are dulled, as in the stage preceding sleep, these images begin to emerge from their concealed places, and deploy upon the mental stage. All the while we are wrapped up in the interest which they excite in us and are referring them to the peripheral extremities of our sensory nerves, projecting them upon a field external to ourselves and giving them all the attributes of reality. Every image thus projected is an hallucination, and dreams, in which we see imaginary persons, hear imaginary voices, taste imaginary things, are hallucinations of the mind—psychic hallucinations. In by-gone days, when stories about Puck and the fairies were devoured with eager credulity, it used to be told how, after a household had retired to rest and all was stilled in the deep quiet of the night, the pixies stole upon the scene and engaged in tricks and gambols, or in serious work, until the morning dawn scared them away. It is even so with our dreams: when attention, judgment, and all the other presiding powers of the mind, fatigued by the labor of the day, sink into a state of complete or semi-rest, the images of past events steal into the foreground, and, like the pixies, busy themselves until reawakened reason calls them to order and restores them to their subordinate place in the composition of the mind. How vivid and graphic these images are! No sorcerer ever professed such a power of evoking the past and the dead, no fairy was ever so little shackled by necessities of time and space. A dead friend returns and renews the affectionate intercourse of yore. A long-silent voice sounds in our ears; the scenes and incidents of early life come back again with all their old charms, and pass, like dissolving views, before the mental eye. All the while, like children poring over fairy tales, we are wrapped up in the images thus evoked, and never think of questioning their reality. The writer is a great traveller in his dreams; night after night he goes through exciting adventures by flood and field, and often the broken thread of one dream is taken up in the next succeeding. In these dreams he is affected by a psychic hallucination of remarkable force, and experiences all the emotions which he would have felt had the incidents formed part of his waking consciousness. He is in the same hurry to catch a train or boat, the same nervous apprehension about being too late, the same anxiety about the condition of his neglected business affairs, but with this difference—one of degree, not of kind—that his emotional sensibility is greatly exaggerated and his calculation of time quite peculiar. He is fretted out of all proportion to the natural difficulties of the situation; events which would require a long time for their fulfilment are accomplished in a moment, and, with that entire disregard of the possible so common in dreams, he is transported instantaneously from one to the other of two cities six hundred miles apart.

Many curious examples go to show that the images which revive in dreams are not those to which we have given serious and careful attention in our waking hours. There are exceptions, of course, but probably most dreamers find a prominent feature in their dreams to be some incidents of a previous day of an unusual, though, at the same time, casual nature. They are generally incidents which happen suddenly, produce a momentary shock, and are then soon forgotten amid the more absorbing pursuits of life. But it is to these very qualities of suddenness and unusualness that their revival in dreams is due. The vigorous molecular action of the cerebral cells, excited by a fresh and sudden stimulus, continues in a subdued degree after their first violence is spent, and, though suppressed for a time by the ordinary impressions of life, revive when these are quieted by sleep, their mental correlative, the image, reviving with them. This image is commonly the most prominent of the dream-drama—the central figure on which all the attention of the dreamer is fixed, and for which all the varied incidents of the dream are shaped. We meet a strangely-dressed figure in the street; we are suddenly impressed for the moment and then cease to think of him, but the abruptness of the impression has stamped a clear image upon our minds, which will emerge when we are asleep and form the central figure of a dream. It is so in the delirium of fever, during which persons have been heard to speak strange languages, of which, upon recovery, they acknowledged their complete ignorance. And, on tracing the histories of such cases, it has invariably been found that at some past time they had heard these languages spoken; they had paid no special attention to them, they had never, perhaps, sought to engrave them on their minds, but they had been suddenly impressed by their strangeness, and this impression it was which, reviving, after many years, under circumstances of great cerebral excitement, called up the images of the forgotten words. The proof that this phenomenon is only due to the spontaneous revival of former images is found in the fact that such persons do not extemporize in strange languages; they merely repeat the same words, in the same connection, which they heard when awake, without understanding their meaning. The following is one of the many examples of the truth of these observations: A young woman fell ill of a fever, and, in her delirium, spoke long passages of Latin, Greek, and Rabbinical Hebrew, many of which were reduced to writing. On recovering she protested that she knew absolutely nothing of these languages, but said that she had lived, when a child, with her uncle, a learned clergyman, who was wont to recite passages from books written in these tongues as he walked in the passage-way adjoining the kitchen.[1]

The observations first made are only applicable to the spontaneous revival of images in dreams. In the waking state, the rule is, the greater the attention bestowed on an impression, the greater, *cæteris paribus*, its revivability at a subsequent time. But this is the volitional revival of images, or recollection.

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[1] *See* Coleridge, "Biographia Literaria," pp. 234, 235. New York, 1852.

Every one is familiar with the absorbing vividness of dream-images, how we become enchained by them and follow their unfolding with as much interest and attention as though they constituted a drama in real life and we were its rapt spectators; how the imagination, the most active of all faculties in dreams, plays with images, combining, altering, and developing them according to its temporary humor. This is what Miss Cobb happily calls the "myth-making faculty." The following example from Maury illustrates it, and serves further to show the extreme rapidity with which a connected train of images may pass through the mind of the sleeper—a point on which more will be said presently. One evening, not feeling altogether well, he retired to bed, and his mother took a seat at his side. He soon fell asleep and dreamed that he was living in the Reign of Terror, that he was witness to many shocking massacres, was arrested and dragged before the revolutionary tribunal, where he met Marat, Robespierre, and other prominent leaders of the time. Here he was tried and condemned to death, and then trundled away in a cart through a throng of excited people to the place of execution. He ascended the scaffold, laid his neck on the block, and felt the knife sever his head from his body. And this series of intensely dramatic situations was occasioned by the frame of his bed becoming detached and falling on his neck like the knife of the guillotine.[1]

Although we have used this example to illustrate the myth-making faculty, we must not omit to say that it is given by its author as an instance of another phenomenon of the dreaming state, viz., the rapidity with which a long and complex train of images may pass through the mind in dreams. He noted the time intervening between falling to sleep and awaking, and found it to be almost inappreciable. Phenomena of this class "are generally explained," says Dugald Stewart, "by supposing that, in our dreams, the rapidity of thought is greater than while we are awake; but there is no necessity for having recourse to such a supposition. The rapidity of thought is at all times such, that, in the twinkling of an eye, a crowd of ideas may pass before us, to which it would require a long discourse to give utterance; and transactions may be conceived which it would require days to realize. But, in sleep, the conceptions of the mind are mistaken for realities; and therefore our estimate of time will be formed, not according to our experience of the rapidity of thought, but according to our experience of the time requisite for realizing what we conceive."[1] To comprehend this question fully, it will be necessary to distinguish, more clearly than Stewart and other writers have done, between *rapidity of thought* in dreams and *time* as measured by the dreamer. Although we have no quantitative measurement, but merely a qualitative estimate, of the rapidity of thought in dreams, still a reference to the last example, quoted from Maury, is sufficient to show that what is called thought does flow very swiftly in this state.[2] We say what is called thought, because, in reality, the process going on in the dreamer's brain is not one of thinking, but simply of the automatic revival of images of past states of consciousness; of thought, properly so called, there is seldom any in dreams. Some dreamers, indeed, are said to have pursued elaborate trains of thought, to have even solved intricate problems in their dreams, and all such facts are readily explained on the hypothesis of the unequal activity of the mental faculties in sleep, already treated in the beginning of this paper. But, though it would not be correct to deny the occurrence of trains of real thought in certain states of dreaming, inasmuch as in such states volition is only partly in abeyance, we view most marvels of the above kind as merely the result of the thinking done in the daytime. It may be that the final solution of the difficult problem had just peeped in on the mind of the student whose fatigued and puzzled brain was unequal to the task of fixing and retaining it. Every earnest thinker must occasionally have had this very tantalizing experience. The idea is just beginning to take shape, the word is half on our tongue, when both suddenly vanish as completely as though we had never vexed ourselves about them. Now, we believe that many of the wonderful discoveries said to have been made in dreams are merely the result of the spontaneous revival of these flitting apparitions and their development under the more favorable conditions of sleep. This is the proper explanation of the dream of the bank-teller who discovered through it the reason of the deficiency of six pounds in his book of interests. Therefore, when the point in discussion is the rapidity of thought in dreams, we mean, or ought generally to mean, the rapidity of the revival of images. And, if this be what we mean, there can be no question that they revive, not only more rapidly, but more suddenly, more completely, with stronger individual distinctions of form, coloring, light and shade, than in the waking state. This is only another way of saying that dreams are wonderfully vivid. No one, not laboring under some powerful emotion concentrating all thought upon one subject (as in the wonderful life retrospects experienced by persons on the point of drowning) and not affected with mental derangement, could, when awake, conceive, in so brief a time, a succession of images so varied and complete as those which entered into Maury's dream about the Reign of Terror.

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[1] "Le Sommeil," etc., pp. 139, 140.

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[1] "Philosophy of the Human Mind."

[2] The experiments of Donders have given the one-twenty-sixth of a second as the time in which a single thought may be effected in the waking state.

But, as already observed, the rapidity of thought is one thing, and the estimate of time formed by the dreamer's mind is quite another. This estimate is very much influenced, first, by the physiological action of certain drugs. Opium, for example, caused De Quincey to have a very exaggerated notion of time in his dreams. "The sense of space," he says, "and, in the end, the sense of time, were both powerfully affected. Buildings, landscapes, etc., were exhibited in proportions so vast as the bodily eye is not fitted to receive. Space swelled, and was amplified to an extent of unutterable infinity. This, however, did not disturb me so much as the vast expansion of time. I sometimes seemed to have lived for seventy or one hundred years in one night; nay, sometimes had feelings representative of a millennium, passed in that time, or, however, a duration far beyond the limits of any human experience." But, secondly, it will be chiefly influenced in ordinary dreams by the number and variety of their incidents. The more frequent the shiftings of scene, and the more numerous the images, the longer will the dream appear. And this leads us to the true explanation of the conception of time in dreams. For, as the images and incidents of dreams are real objective states to the dreamer, he applies to them the same measure of time that he would have applied had they been his waking experience.

Something may here be said regarding the apparent faculty of prevision in dreams, one of the chief causes which still contribute to envelop them in an atmosphere of mystery. When Calphurnia dreamed that her husband, Julius Cæsar, fell bleeding across her knee, and the day after he was stabbed to death in the forum; when Socrates was warned of his end in a vision a few days before it was fixed; when such prophetic visions were granted exclusively in dreams, the belief in their supernatural source would seem a necessary *a priori* judgment; and the credulity of Josephus, and of many shrewd and able men not only before but since his time, ceases to be so baseless. Josephus, indeed, is particularly severe on those who doubt the inspired nature of the dreams he relates, contemptuously relegating them to the domain of their own self-conceit. "But if any one does not believe such revelations, let him indeed enjoy his own opinion, but let him not hinder another that would encourage himself in virtue."[1]

Dreams of an apparently prophetic character may be divided into three classes, according to the principle on which each is explainable. Those of the first class are merely spontaneous revivals of images, and have no proper previsionary character whatever. An image of some forgotten event suddenly flashes into the mind unsupported by any of the accessory images by which it was wont to be fixed in its proper place, and so recognized as a past sensation. When this image, which has been so completely forgotten as to appear a new revelation, is confirmed by a subsequent experience, it has all the air of a prediction. To illustrate: Maury was several times visited in his dreams by a very strange-looking individual who wore a white cravat and a broad-brimmed hat. A few months after, to his great surprise, he encountered this very individual in the street. This looked like a prediction, but at length he remembered that he must have casually met him in his walks to and from this place a year before.

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[1] "Antiquities of the Jews," Whiston's translation, b. xvii., ch. xiii.

Another class of apparently prophetic dreams is to be explained on the hypothesis of suggestion. A person alarmed about the health or safety of his friend goes to bed and dreams of his death. The day following he receives a message announcing that the dreaded event has really taken place, and discovers, on comparing notes with the messenger, that it happened about the same time as his dream. The point of time, however, is a mere coincidence of which no account need be taken. The really important part of the dream, its apparently prophetic character, is fully explained by stating that the apprehension in the person's mind regarding the health of his friend suggested in the dream the image of his death.

The phenomena of suggestion are best observed in artificial sleep or hypnotism. If an individual in this state be given a certain bodily position, it will excite a corresponding mental idea, and produce an answering muscular action. The head of a hypnotized person being thrown back and his spine straightened, his countenance assumes an expression of lofty pride indicative of the same feeling in his mind. If, immediately after, his head be bent forward, his neck bowed, and his arms flexed upon his breast, he as instantaneously assumes the facial expression of profound humility. "So, again," says Dr. Carpenter, from whom the above facts are quoted, "not merely emotional states, but definite ideas are thus excitable. Thus, if the hand be raised above the head, and the fingers are flexed upon the palm, the idea of climbing, swimming, or pulling at a rope, is called up; if, on the other hand, the fingers are flexed while the arm is hanging down at the side, the idea excited is that of lifting a weight; and if the same be done when the arm is advanced forward in the position of striking a blow, the idea of fighting is at once aroused."[1]

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[1] Carpenter, article Sleep, "Todd's Cyclopædia."

And so it is in dreams. The emotions excited in the mind of the person concerning the health of his friend, continuing in sleep, suggested the probable consequence of his illness, his death. Many such dreams are not confirmed by the result, and it is only when they are that they seem prophetic.

A third and last class of seemingly prophetic dreams is explainable on the following principle : Images of past sensations are so arranged, in linear series in the mind, that when one of a given group is recalled, or arises spontaneously, the most recent appear last in time, or nearest, the others range themselves end to end behind it, stretching, it may be, far back into the past. Such will always be the order of the succession in the operation of recollection, which consists in fixing the position of past events in the order of their occurrence. But, if, instead of tracing our revived images *backward* from a given point, we trace them *forward*, they will appear in the future. Now, if the images of a dream occur in this inverse order they also will appear projected into the future ; and if the circumstance dreamed of is confirmed by its subsequent occurrence, we shall say, if we have not understood the nature and frequency of this species of mental illusion, that we had foreseen it in a dream. Let us examine Calphurnia's dream by the light of this explanation. The images stamped upon her mind by the exciting political events of the time had doubtless impressed her with the belief that her husband's life was in danger, and, simultaneously with other images, of the probable mode of his death. Suppose, now, the remotest end of this train of images to have arisen first in her dream, all its other images would appear anterior, and she would be looking down a vista more or less extended according to the circumstances, into the apparent future, and, when Cæsar was actually slain by the conspirators, she would remember that she had foreseen it all in a dream.[1]

3. We come, finally, to inquire into the method according to which the images, so frequently mentioned above, are combined to produce the romances of the dreamer's brain. And

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[1] *See* particularly Taine, "Intelligence," p. 367, *et seq.*, for this explanation of prevision as applied to the waking state.

here we have chiefly to do with the "myth-making faculty" of the mind in dreams.

The method of the association of images in dreams is not altogether peculiar to the dreaming state. It is a part of the plan according to which associations take place in the state of wakefulness, only it is the less important part, or, more correctly, the part most likely, when released from the restraining influence of judgment, to lead to ridiculous and incongruous combinations. Images are associated in the state of wakefulness either by continuity with other images, or by similarity to them—most accurately by continuity. But, in dreams, the method of association is almost wholly by similarity. Let us illustrate this by a few examples drawn, in the first place, from the waking state: "Hobbes . . . . relates how, in the midst of a conversation on the English civil war, some one suddenly asked what was the value, under Tiberius, of the Roman penny; an abrupt question, seemingly unconnected with what had gone before. There was, however, a connection, and with a little thought he recovered it. The English civil war, under Charles I.—Charles I. delivered up by the Scotch for two hundred thousand pounds sterling—Jesus Christ similarly betrayed for thirty pence under Tiberius. These were the links of the chain which led the speaker to his remarkable inquiry."[1]

"Thinking of Ben Lomond," says Sir William Hamilton, "this thought was immediately followed by the thought of the Prussian system of education. Now, conceivable connection between these two ideas in themselves, there was none. A little reflection, however, explained the anomaly. On my last visit to the mountain, I had met upon its summit a German gentleman, and, though I had no consciousness of the intermediate and unawakened links between Ben Lomond and the Prussian schools, they were undoubtedly these: the German—Germany—Prussia—and, these media being admitted, the connection between the extremes was manifest."[2]

"Seeing a mackerel," writes Coleridge, "it may happen that I immediately think of gooseberries, because I, at the same time, ate mackerel with gooseberries as the sauce. The first syllable of the latter word being that which had coexisted with the image of the bird so called, I may then think of a goose. In the next moment the image of a swan may arise before me, though I had never seen the two birds together."[1]

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[1] Taine, "Intelligence."

[2] "Lectures on Metaphysics," p. 353.

It is upon the method thus illustrated, that associations occur between our ideas in ordinary conversation, and he is the liveliest and most entertaining converser to whose mind the similitudes and fainter analogies of things and names are most promptly present, and by whom they are most happily expressed. But when we commit ourselves to a process of formal reasoning, whether in conversation or in the solitude of the study, we chiefly employ the method of association by continuity, one of much greater difficulty, since it requires for its success the close application of all the mental powers.[2] Now, since we have seen that in sleep many of the mental faculties, and of these generally the highest, are inactive, it is evident that this latter method of association cannot be that according to which the images of our dreams are put together, and this assumption is justified by what every one can, if he will, observe for himself. An analysis of the aggregation of one's sleeping fancies will show, in fact, that certain images suggest others, by similarity and analogy only, the resemblance being a more or less close one of the following kinds, viz., of things, of names, of sounds, and of syllables. From this method of association proceeds a good deal of the disorder and incongruity of our dreams. For, the faintest possible analogy may suggest the image of two things, not only widely apart in nature, but mutually contradictory, and thus a dream may be made up of a series of images, having no obvious properties in common, but only faint likenesses in some one or other hidden quality. It is to be remembered, however, that the dream is only incongruous when it is reviewed afterward in the waking state. To the dreamer, the tissue of his dream is connected and quite probable. Exceptions do, of course, occur. Several persons have been vaguely conscious, while dreaming, of the improbability of what was passing before them; and Aristotle,

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[1] "Biographia Literaria," p. 243, New York, 1852.

[2] *See* particularly Stewart, "Philosophy of the Human Mind," pp. 213, 214. 1832.

Reid, and Beattie, have declared they often knew they were dreaming, and could control or terminate their dreams. Such things are by no means impossible when the dreamer is in a very light sleep.

Of the method of association in dreams by resemblances in things, the following is a good example:

"I dreamed once," said Prof. Maass, of Halle, "that the pope visited me. He commanded me to open my desk, and he carefully examined all the papers it contained. While he was thus employed, a very sparkling diamond fell out of his triple crown into my desk, of which, however, neither of us took any notice. As soon as the pope had withdrawn, I retired to bed, but was soon obliged to rise on account of a thick smoke, the cause of which I had yet to learn. Upon examination, I discovered that the diamond had set fire to the papers in my desk, and burned them to ashes."[1] The key to this dream is to be found in the following associations: On the preceding evening he had received a visit from a friend, with whom he had a lively conversation on the subject of Joseph II.'s suppression of religious houses. With this was associated the visit of the pope to the emperor at Vienna, in consequence of measures taken by the latter against the clergy. Self was now substituted for the imperial image, and made the object of the pope's visit. To account for so unusual a circumstance, imagination invented the excuse of the papers in the desk. The desk suggested the diamond, for a few days before, on opening it, he broke the glass of his watch, and the fragments fell in among his papers. The glitter of the broken fragments suggested the sparkle of the precious stone, which, in turn, called up the image of fire and the burning of his papers.[2]

The method of association, by resemblance in names, sounds, and syllables, is illustrated in several examples given by Maury. One morning while engaged in reconstructing his dreams of the previous night, he remembered one which commenced by a pilgrimage to Jerusalem, or perhaps Mecca—whether he was a Christian or a Mussulman at the time he had forgotten. After quite a number of adventures, he found himself in the shop of a M. Pelletier, a chemist, in the *Rue Jacob*, and, during a conversation held with him, received from his hands a zinc shovel (*pelle*). Here, he remarks, are three images represented and associated by three words commencing alike and having a similarity in sound—*pèlerinage* (pilgrimage), *Pelletier*, and *pelle*—all forming the basis of an incoherent dream. A friend, to whom he related the above, gave him another example of the same method of association. In her dream the words *Jardin*, *Chardin*, and *Janin*, were mutually suggestive and productive of a series of varied incidents. She found herself in the *Jardin des Plantes*, where she met *M. Chardin*, a famous Persian explorer, who gave her, in defiance of the evident anachronism, a romance by *M. Janin.*

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[1] Dendy, "Philosophy of Mystery," p. 226. New York, 1845.

[2] Dendy, *loc. cit.*

Finally, the following dream, though commonplace enough in itself, may be given as a complex result of the working up of a few simple images by the agency of association. A friend dreamed of B. and his coming for him hurriedly, in a coach by night, to attend his wife. As the dream advanced, it became more complicated by the introduction of new characters and incidents. B. suggested the image of another gentleman whose name begins by the same letter, and both became connected with the same expected event, though at the time the wife of the latter had been a long time dead and buried. B. No. 2, when engaging the dreamer's professional services, was standing in a large store, a circumstance accounted for as follows: The latter had spent an hour of the evening preceding the dream in the house of B. No. 1, where he met D. and his wife. A chance expression from the lady relating to her husband's store gave him a little surprise, for it came suddenly in collision with a mistaken belief that D. was a retired man of wealth. Now, let us trace the connection of these various sensations with the images of this dream. What started it, in the first place, was the expectation of being called on at any moment to attend the wife of B. No. 1. Here we have the image of the cab coming in a hurry. Secondly, B. No. 1 suggested, by similarity in sound of name, B. No. 2, and the image of the latter standing in the store was suggested by

Mrs. D.'s allusion to her husband's occupation. Thirdly, the dreamer's engagement to attend the wife of B. No. 1 evoked the forgotten memory that he had at one time expected to attend Mrs. B. No. 2, the circumstance of her death a year previous not arising at the same time to check this expectation in the dream. Here is another point worthy of a passing notice, as confirming the fact that the revival of images in dreams is spontaneous and uncontrolled by the reasoning faculties. How happened it that the memory of the death of this lady did not occur in the dream? Simply because her image there awakened related to a past state of consciousness of the dreamer. Hence it was her living image which revived and around which some accessories of the dream gathered. The same phenomenon occurs, when, in our waking state, we call up any portion of our past lives. When we think of our boyhood, it is the image of the boy which revives in memory, not of the boy *plus* all the gradations between him and our present state. It is the same in dreams, but with this qualification, that we believe ourselves to be boys, an illusion which is prevented in our waking state by our judgment and memory assuring us that the image is a reminiscence of the past, not a reality of the present.

We see, therefore, that, in the grouping of images to form a dream, the mind works according to certain principles of association. But it works automatically, and thus often imperfectly, the higher mental faculties not being commonly present to check the association of ideas whose only points of analogy are fanciful resemblances. For the images of a dream follow mechanically the direction first given them, until, encountering other images, perhaps of a different kind, the two groups coalesce and the dream is transformed; just as, in heathen mythology the fanciful union of the upper part of the form of a man with the body of a horse gave rise to the conception of the centaur.

There is no true recollection in dreams—none of that voluntary effort by which we recall past incidents by means of others more familiar. Hence they lack the perspective which gives them a place in time; hence, furthermore, incidents of widely-distant periods are represented as occurring together—there is no respect for chronological succession. De Quincey had been, in his youth, a close student of Livy. Frequently, after closing the book, he would hear the lofty title *consul Romanus* sounding in his ears. He was also, at the same time, deeply interested in the epoch of the English Parliamentary wars. In his dreams these two widely-separated historic periods would arise together. English dames, of the stately court of Charles I., mingled socially with old Romans like Paulus and Marius.

There are many dreams, however, in which all the images are more in keeping with the original impression, though chronology may not be better respected. Of such is De Quincey's dream of the Malay with its Oriental scenes and incidents. A wandering Malay, whom he had once befriended at his door, recurred to him in his dreams, and brought with him a train of harrowing adventures. "I was stared at, hooted at, chattered at by monkeys, by paroquets, by cockatoos. I ran into pagodas, and was fixed for centuries at the summit or in secret rooms; I was the priest; I was worshipped; I was sacrificed; I fled from the wrath of Brama through all the forests of Asia; Vishnu hated me; Siva laid wait for me. I came suddenly upon Isis and Osiris; I had done a deed, they said, which the ibis and the crocodile trembled at. I was buried, for a thousand years, in stone coffins, with mummies and sphinxes, in narrow chambers, at the heart of eternal pyramids." The images of this dream, though greatly exaggerated, are well put together. How wonderfully they are unfolded! The image of the Malay no sooner suggests the Orient, than immediately the dreamer's impressions of that mysterious country arise with all their splendor of coloring. Still there was an absence of judgment—the fatal defect of most dreams. In dreams the mind is in its childhood, and in childhood we are of the stuff our dreams are made of. If any one had told De Quincey awake, that an act of his was heinous because it had made the ibis and the crocodile tremble, we can imagine how he would have been amused.

Here we must perforce stop, though many interesting points of our subject remain untouched. Sufficient, however, at least for the present, if we have succeeded in explaining a few of the psychological problems which every one encounters, more or less often, in his dreams.

Art. II. — *Chronic Non-Suppurative Inflammation of the Middle Ear.* By D. B. St. John Roosa, M. D., Clinical Professor of the Diseases of the Eye and Ear in the University of the City of New York, Surgeon to the Manhattan Eye and Ear Hospital.[1]

Both in the ranks of the laity and the profession, the treatment of aural diseases has of old been stigmatized as unsuccessful and unsatisfactory. Carefully-made observations of the results of rational and scientific practice, in a large number of cases, have shown that this reproach can only with justice, if at all, be applied to two classes of the affections of the ear. Nearly all the others are singularly tractable when their course is properly regulated. By these two classes, I mean chronic non-suppurative inflammation of the middle ear, and the affections of the labyrinth, or internal ear. In recent times the generic term, chronic catarrha inflammation of the middle ear, is usually employed to designate the former variety of disease.

I shall soon find fault with the indiscriminate use of this name, but for the present we may allow it to stand, as giving a pretty clear idea of the affections arranged under it. Statistics show that, of every thousand cases of aural disease, that present themselves in private practice, a little more than one-half are chronic non-suppurative inflammations of the middle ear.[2] The disease is called chronic because, when it first comes to professional notice, it has usually already existed for months and years, and because, if unchecked, it ad vances with destructive progress as long as life lasts. Although the disease often does its work of impairing or destroying the function of hearing, withb ut few of the subjective evidences of what is called inflammation—there may be no heat, redness, or pain—we find many of the other marks of diseased action, in swelling, thickening, adhesions, which entitle it to be placed under this head. It has also been of late called a catarrhal inflammation, because the cavity, air-chamber, and tube, which form its seat, are lined by mucous membrane. We say middle ear, because these parts form the anatomical centre of the organ of hearing. It is the same disease which Sir William Wilde understood, but which, as it seems to me, he inappropriately called chronic myringitis, or inflammation of the drum-head. But the drum-head is only one of other parts that is affected in this disease, and may, perhaps, be scarcely at all injured, while the most important changes in structure and function have occurred in other parts of the middle ear. In common speech—and I do not mean by this, among the laity, but in the profession—many of the forms of chronic catarrh of the middle ear have been, from time immemorial, classified as nervous. The great author whom I have just quoted did much to combat this error—an error which not only kept back the growth of the science of otology, because it retarded the conception of a successful plan of treatment, but which also assisted to deepen the reproach which for centuries has rendered aural disease the *bête noir* of medical practice.

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[1] Read before the New York Academy of Medicine, and being a part of a chapter of a work on the "Diseases of the Ear," now in press.

[2] New York Medical Journal, August, 1869. Transactions Medical Society State of New York, 1871.

The reason for this classification of these affections as nervous is found in the fact that the poor means of diagnosis, which were in the hands of the profession until a few years since, the absence of a simple otoscope, and the want of knowledge of the value of the Eustachian catheter, and the tuning-fork, did not allow of the appreciation of the delicate changes which make up what the Germans call the *Krankheitsbild*," the picture of the disease. There was another reason in the fact that the poor, distressed patient, having gone in vain to his usual consolers, if not curers—the regular practitioners—often resorted to the charlatan. Under his wonderful but distressing treatment, added to the trial of the horrible *tinnitus aurium*, and impairment of hearing, he became so utterly worn out and so distrustful of each new adviser, that the so-called nervousness was very apparent.

As yet this class of cases comes as a rule to the notice of the practitioner of modern otology only when the disease is far advanced.

The following table shows this:

Chronic Aural Catarrh.—Whole number 505.

No. of cases of 80 years' standing	1
“ over 40 “ “	6
“ over 20 “ “	40
“ between 10 and 20 years' standing.	133
“ “ 5 and 10 “ “	141
“ “ 3 and 5 “ “	75
“ “ 1 and 3 “ “	74
one year	42
less than one year	13
Whole number	505

These are the cases of this disease that I have recorded, in private practice. It will be seen that by far the larger number, more than fifty per centum, had observed some loss of function for more than five years, while about eight per cent. had been affected for more than twenty years.

Every person has, so to speak, a superfluous amount of hearing, which he may lose before his hearing is sufficiently impaired to annoy him in the common affairs of life. People who spend many hours of the day in noisy places, such as boiler-shops, railway cars, on board steamships, in the stock-board of Wall Street, as I have seen by frequent examples, may lose very much of their hearing power before they are at all aware of it. Then, again, the lower classes, who labor hard all day in the open air with their fellows, and who live at night in small and noisy rooms where the demands upon the hearing power are very slight, hardly consider its impairment as a loss of function.

These causes have conspired, with the general ignorance of the pathology and treatment of non-suppurative aural disease, to render the results of treatment unsatisfactory, as well as to cause patients to consult a physician at a very late stage of their trouble. Be all this as it may, we now have tolerably accurate means of diagnosticating and fairly successful means of treating those affections, and it is in the light of these recent advances in scientific otology that I wish to speak.

First, as to the nomenclature. I have never been fully satisfied with the nomenclature of Von Tröltsch, vast improvement as it was on those classifications which had preceded it. Some of them were crude, others fanciful and altogether too refined. Von Tröltsch classified all non-suppurative disease as catarrhal, and then separated those in which the catarrhal symptom—excess of secretion—was not very marked, by placing them under the head of sclerosis or hardening or rigidity of the mucous membrane. After looking at many ears in which there was no trace, either in the pharynx, Eustachian tube, or cavity of the tympanum, of an excess of secretion from the mucous membrane, but in which there were marked changes in the way of increase, hypertrophy or proliferation of tissue, I felt that aural catarrh was a meagre and incorrect name with which to describe such a state of things. The very name "catarrh," as applied to a sunken drum-head, immovable chain of bones, dry pharynx, easily-permeable Eustachian tubes, is repugnant to all our notions of scientific nomenclature. Whatever may have been the origin of such cases, they cannot be called catarrhal, when their examination shows such a state of things as this.

Gruber has made a division in his text-book, and describes an *otitis media hypertrophica*, or plastic inflammation; but I think his own description of the pathology of the disease, as well as all clinical experience, upon which latter my own observations are founded, justifies another name for the morbid process. I therefore propose to divide the chronic non-suppurative inflammations of the middle ear into two great classes—

Catarrhal and Proliferous.—I choose the translation of the German word *Wucherung* as furnishing the best adjective to describe the changes in the middle ear, of which I am to speak; and in what I have to say I shall attempt to be guided by these divisions.

Some authors and practitioners would admit another classification, based upon the parts involved, and speak of chronic myringitis, or chronic inflammation of the membrana tympani, and of chronic catarrh of the Eustachian tube. Whatever we may believe of acute inflammation of these parts, I can scarcely accept the idea of one that has existed for any considerable space of time without involving either the cavity of the tympanum or the mastoid cells, or both. The nomenclature, tubal catarrh, leads, as I believe, to incorrect notions as to the therapeutic value of the Eustachian catheter, and of Politzer's method of inflating the drum cavity. These methods of treatment are useful, not so much for what they do to the tube, but for their effect upon the cavities into which it opens. When air-bubbles are crackling in the cavity of the tympanum, as in catarrhal inflammation, or when the tube is greatly narrowed by the hypertrophy of its lining membranes, but at the same time we have, as we always do, in the the latter case, a sunken drum-head, altered light spot, signs of proliferous inflammation of many of the structures making up the middle ear, I do not see how we can with propriety speak of a tubal affection, even if its symptoms are predominant, and even if treatment of and through the lining membrane of the tube does place things in such a condition that Nature will complete the cure. No time need be spent upon this question, which may, perhaps, seem to some a comparatively unimportant one, had not incorrect notions in the past led to an incorrect style of treatment. In former times, the membrana tympani, under the assumption that such an affection as an independent chronic myringitis existed, was vigorously treated by instillations of various fluids, and by perforation, and of late, under the idea that we have a great deal of tubal catarrh without further progress in the morbid action, undue stress is sometimes laid upon applications to the mouth of the tube; Politzer's method is substituted for the catheter, when its true place, valuable and indispensable as it is, except in the case of very young children, is an adjuvant to that instrument.

SYMPTOMS OF CHRONIC CATARRHAL INFLAMMATION.

Subjective.—I think we may assume, from the history of cases, that this form of disease is either a consequent of frequent attacks of acute catarrh of the middle ear, or that it occurs in people who have what we may call a catarrhal diathesis. The disease is, therefore, unlike its companion, prolifreous inflammation, not at all insidious in its approach. The patient suffering from this disease, who consults us about his hearing, is usually aware that there is an excess of secretion in his pharynx, and that for years he has been annoyed and troubled by being obliged to use a handkerchief very freely, and by feelings of fulness referred to the frontal sinus and tympanic cavities. There is often, also, at times, a sound in the ear like crackling air-bubbles. The voices of friends appear muffled, and it is hard, for the victims of chronic aural catarrh, when the disease is advancing, not to believe that every one is speaking in a much lower tone than is usual for them. Such patients often complain bitterly on this subject, and will scarcely admit that their hearing is at all impaired, or, if so, they stoutly assert that it is one ear only, when the fact is, that, with one perfect ear, it is only under peculiar circumstances, certainly not in ordinary conversation, in front of the patient, will a person be observed to be at all hard of hearing.

There is a feeling about this that is different from that expressed about diseases of the eye at least, and I believe, in most maladies, patients will express their feelings, and often with an exaggeration, rather than with an extenuation of the symptoms; but, however much patients with chronic inflammation of the middle ear may suffer from impairment of hearing, they will often insist that they are scarcely affected, or that they have a very little trouble in that way, when they can scarcely hear loud conversation addressed specially to them.

Patients affected with chronic catarrh of the middle ear also complain, as a rule, of tinnitus aurium, and a sense of fulness in the ears. The ears feel as if the auditory canals were stopped up. They often ask very anxiously if there is not something in the ear, and seem incredulous when the negative answer is given. Vertigo is another symptom of which these patients speak. This is often considered as undoubted evidence that there is disease of the brain. It is a symptom by no means peculiar to catarrhal inflammation. It also occurs in impacted cerumen, and still more frequently in proliferous inflammation, as well as in cerebral disease. When it occurs in aural disease, it is a consequence of increased pressure transmitted to the labyrinth through the fenestra ovalis. It is by no means a serious symptom, when the cause is to be found in the ear, for it is usually relieved by a mechanical treatment through the Eustachian catheter. There are many cases in my note-book which illustrate this, but none more striking than the following:

A physician consulted me last winter on account of impairment of hearing in one ear, accompanied by a tendency to topple over on that side, which he said was a consequence of being thrown from his sleigh some months before, when he suffered a concussion of the brain. He was quite disposed to regard the tendency to fall over as a cerebral lesion, but the use of the Eustachian catheter, and Politzer's method of inflating the ear, not only improved the hearing, but took away the unpleasant sensation for a time. Although I have not seen him since, physician as he was, he was at first disposed to smile at the idea of using local means to ameliorate this brain-symptom.

I have often heard patients describe the feeling of fulness in the ears as a sensation as if the ears were plugged with some foreign substance; it is almost impossible for them to avoid the impression that the auditory canals are plugged with cerumen. Very many times, after I have examined a patient suffering from chronic disease of the middle ear, has he asked me to look again to see whether I could not find some hardened wax; and on one occasion a poor fellow, who I suppose was, to a certain extent, insane, grew very angry and called me hard names, because I would not remove wax which he knew was in his ear.

Tröltsch[1] relates a case of Meyer, of Hamburg, where a melancholic person was relieved of a sound in the ear, seeming to him to be the cry of a child, by the removal of a plug of cerumen, which caused deafness on one side. The patient made a rapid and complete recovery from the mental affection, after the cerumen was removed. It is the opinion of Schwartze,[2] of Halle, a very careful and competent observer, that subjective aural sensations, which are caused by demonstrable affections of the ear, may, in predisposed persons, especially when there is any hereditary tendency to mental disease, become the direct cause of aural hallucinations, that may accelerate the outbreak of a disease of the brain. He mentions a case where, in his opinion, and in that of one of the physicians of the Insane Asylum at Halle, a threatened attack of brain disease was prevented by treatment of the ear. In some cases insane persons who suffer from aural disease distinguish its tinnitus from these illusions or hallucinations.

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[1] "Text-Book," Second American edition, p. 531.

[2] *Loc. cit.*, p. 532.

Dr. Koppe confirms this view, and shows that in some cases hallucinations disappear after treatment of the ear.

I have elsewhere reported[1] a case of the suicide of a professor in one of our educational institutions, who consulted me on account of impairment of hearing, but more especially on account of tinnitus aurium. He said, on leaving the consulting-room, that, if he felt sure that I was correct in my opinion (that he would not get great relief from this very trying symptom, tinnitus), he would put an end to his existence, which he did after a few months by blowing out his brains. During this last summer, a gentleman, a public-school teacher, consulted my associate, Dr. Charles S. Bull, in regard to a suppuration of the ear, which caused considerable impairment of hearing and great tinnitus. He was exceedingly depressed and annoyed by the tinnitus. It is said that he committed suicide on account of the depression caused by this state of his ears. There can be no doubt but that this symptom is one of the most distressing that can befall a patient, and that it sometimes is the provoking cause of some cases of suicide. Again and again I have satisfied myself that the great depression, which is the rule in persons whose hearing is impaired, was due entirely to the aural disease.

Dr. O. D. Pomeroy, of this city, examined sixty lunatics at Blackwell's Island Lunatic Asylum, and states[2] that "the result of the examination is a little in favor of the hallucination-cases being associated with aural disease," although this proportion was not as large as quoted by Schwartze and Koppe.

Dr. C. E. Wright[3] publishes a case of a patient in the Indiana State Asylum for the Insane, who attempted to destroy herself by putting a steel button in her ear. The patient was discharged from the hospital, as having recovered her reason, but became nervous and despondent, until she was relieved by the removal of the button, and a dread of insanity and of sudden death, from which she suffered, then also disappeared.

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[1] NEW YORK MEDICAL JOURNAL, August, 1869.

[2] Transactions American Otological Society, Fourth Year, p. 46.

[3] *Indiana Journal of Medicine*, November, 1871.

Von Tröltsch speaks of confusion of the intellect, inability to keep up a connected line of thought, as a subjective symptom of chronic aural disease, and I am enabled to verify this opinion. Over and over again, have patients with chronic disease of the middle ear, not suffering from pain but from tinnitus, voluntarily informed me that these noises, together with the impairment of the hearing, had a great effect upon their mental powers. On the other hand I have seen cases where most successful men, such, for instance, as distinguished general officers in the army, and successful writers, have suffered from boyhood with chronic inflammation of the middle ear and tinnitus aurium.

The sounds in the ears, of which patients speak, are variously described: some speak of a ringing of bells, which is perhaps the most aggravating form; others have likened them to the murmur of trees, the hum of a teakettle, etc. Wilde is undoubtedly correct in stating that the descriptions which patients give of the noises depend to a certain degree upon their fancy, their graphic power of explanations, and not unfrequently upon their rank of life and the sounds with which they are most familiar; thus, he says: "Persons from the country or rural districts draw their similitudes from the objects and noises by which they have been surrounded, as the falling and rushing of water, the singing of birds, the buzzing of bees, and the waving or rustling of trees; while, on the other hand, persons living in towns, or in the vicinity of machinery or manufactories, say that they hear the rolling of carriages, the hammerings, and the various noises caused by steam-engines. Servants almost invariably add to their other complaints that they suffer from the ringing of bells in their ears; while, in the country, old women much given to tea-drinking sum up the category of their ailments by saying that 'all the tea-kettles in Ireland are boiling in their ears.' " No description of tinnitus aurium has ever surpassed this one given by the great Irish observer.

Only one thing more need be added as to the nature of this symptom. The ordinary tinnitus should be distinguished from the venous murmur of anæmia transmitted from the jugular vein which runs just beneath the floor of the cavity of the tympanum, and from the pulsating sound of the internal carotid as it winds through the apex of the petrous bone.

Patients suffering from chronic catarrhal inflammation of the middle ear usually speak of the throat as troubling them quite as much as their ears. In many cases, however, they say nothing whatever about the throat, and, even if asked about it, they will insist that there is nothing wrong about it, although they will usually admit that they raise a great deal of mucus in the morning, and that they have sore-throat very often. The greater number of patients with aural catarrh complain greatly of the condition of their pharynx and nostrils, and, under the stimulus of the advertisements and books of charlatans, have usually very much to say of the catarrh, although they do not always trace a connection between the throat-disease and that of the ear.

There are very many other symptoms than these which have just been enumerated—feelings of fulness, confusion of intellect, vertigo, tinnitus, and sore-throat—of which patients with chronic catarrh of the middle ear will complain; but they are not usually dependent upon the aural disease, and the examiner may often throw many of them out of consideration, and bring the patient back from the long story of headaches, dyspepsia, neuralgia, etc., by asking if, after all, were the ear and throat well, they would not consider themselves in good health, when an affirmative answer is often given.

SUBJECTIVE SYMPTOMS OF PROLIFEROUS INFLAMMATION.

If we now turn to the picture of the subjective symptoms of what I term proliferous inflammation, we shall find them much less positive than those of the catarrhal form. Few of the patients have no subjective symptoms at all, except that of loss of hearing, which is of course an objective symptom as well. They have no sore-throat, no increase of the secretion of the pharynx or nostrils. Others, again, complain of feelings of fulness in the ears, and nearly all of tinnitus aurium. Indeed, I think the tinnitus is apt to be more troublesome in the proliferous than in the catarrhal form. This we should suppose *a priori* to be the case, because the causes in the proliferous variety of middle-ear disease are constantly acting, while in the catarrhal variety the temporary removal of the increased secretion will often greatly alleviate this symptom, and sometimes completely remove it. The origin of this form of aural trouble cannot be traced back to infantile earaches, frequent coryzas, or to naso-pharyngeal catarrh. It is a peculiarly insidious affection, one which is usually under full headway, and which essentially impairs the function of hearing long before the patient is aware that he has any affection of the ears. The pathology of the disease, of which an account will be given a little later on in this paper, explains something of this insidious character.

Catarrhal and proliferous inflammation may exist in one and the same ear, when it will be impossible to make a differential diagnosis, yet in the greater number of cases the line can be drawn between the two forms.

OBJECTIVE SYMPTOMS OF CATARRHAL INFLAMMATION.

The objective evidences of chronic catarrhal inflammation of the middle ear may be classified as follows:

1. Impairment of hearing.
2. Changes in the membrana tympani.
3. Imperfect action and changes in the structure of the Eustachian tube.
4. Naso-pharyngeal inflammation.

If we exclude the latter, we have also the objective symptoms of chronic proliferous inflammation.

The tuning-fork is one of the most useful means of diagnosticating an affection of the middle ear from one of the labyrinth. In the catarrhal form of disease its use is not as essential as in the proliferous, for the good reason that the subjective and objective symptoms together form such a decided picture that it would be hard to fall into error as to the seat or nature of the trouble. But, in the proliferous form, both sets of symptoms are often of such a negative character that without the tuning-fork we should be in some doubt as to whether we were dealing with a peripheric or central disease.

Starting from the well-established fact that, if the auditory canal of a person having healthy ears be closed by the finger, or in any other way, the sound made by a vibrating body is heard more distinctly on the side of the head where the ear is closed, it has been shown that, in most diseases of the auditory canal and middle ear, such vibrations are more distinctly felt on the affected side, or, if one be diseased, on the side of the ear most affected, and on which the ticking of a watch or the sound of conversation is not as well heard. This is not the place to go into a discussion as to the explanation of this phenomenon, but I think the facts of the general reliability of the test are indisputable. The use of the tuning-fork must, however, be considered to some extent as a subjective test, as usually employed, for by it we must depend on the patient's statement as to which ear he hears the vibrations the better. By means of a double otoscope, however, such as was used by Lucae in his experiments, we may make the test more exact.

After having, in the doubtful cases of the proliferous variety, settled the fact as to whether we have an affection of the middle ear or of the labyrinth, the ticking of the watch and ordinary conversation become the natural tests as to the impairment of hearing.

CHANGES IN THE MEMBRANA TYMPANI.

I do not regard the appearance of the drum-head as positively indicative of aural disease. In some few cases we find the membrane in what may fairly be said to be a normal condition in appearance, and yet we may have a very great impairment of hearing, which the other objective symptoms as well as the tuning-fork show to depend upon disease of the middle ear. These cases are not common, and then, if the loss of hearing is great, we may conclude that the alterations in structure are chiefly upon the inner or labyrinth wall of the cavity of the tympanum.

The first question, in studying the membrana tympani, is very naturally, What is the appearance of a normal one? I believe that the introduction of Von Tröltsch's method of examining this membrane has done more than any thing else to stimulate the study of this membrane. The ordinary anatomical text-books give no true idea of this beautiful and important part. Such authorities on aural disease as Kramer, Wilde, and Toynbee, give descriptions of it that are far from exact. To Von Tröltsch and Politzer are we indebted for such perfect descriptions that we now have a complete guide to the changes that may occur upon it.

In order to determine what may fairly be considered a normal membrana tympani, I have examined a number of what may be considered healthy ears. The persons whose ears were thus examined were not aware that they had ever had any kind of aural inflammation, even in childhood. They did not suffer from naso-pharyngeal catarrh, and never had suffered from it. The hearing - distance, as tested by the watch, was normal, and the tuning-fork was heard equally well on both sides of the head. Such persons are very rare in any community, and consequently I have only as yet examined seventeen membranes belonging to this class. From these cases, and the observation of others, I determine that the color of the membrane may vary from a neutral gray to a dark blue, but it is rather more inclined to a gray than to a blue. The lustre and transparency vary exceedingly, the membrane may be very brilliant and transparent, so that the stapes shows through, and it may be quite dull and hazy in appearance.

The light spot at the end of the malleus is usually triangular in shape, although not always. It is, perhaps, always present in some form if the hearing be normal. The handle and short process of the malleus are plainly visible. There may be opacities at the margin of the membrane, where, as Tröltsch showed, the mucous membrane is thickest. The gray color may be modified by a delicate pinkish injection along the periphery of the membrane and handle of the malleus.

An acute catarrh of the middle ear in childhood is sufficient to change the color or curvature of the membrana tympani, and thus render it impossible to say that we are dealing with a normal membrane.

The membrana tympani of the child differs from that of the adult in being more transparent, rather of a yellowish tinge than gray, while the handle of the malleus is not as distinctly seen.

Politzer has shown, in his work on this membrane, that the triangular spot of light, which is the great point in the study of this membrane, is due to the manner of the reflection of light from its surface. He says, no light would be reflected to the eye from the membrane if it were a plane surface, but, according to optical laws, all the light would be reflected against the anterior and lower part of the canal. In consequence, however, of the inward curvature of the membrane from the traction of the handle of the malleus, its parts convey such a change of inclination that the anterior portion stands at right angles to our axis of vision, and the light thrown upon it is reflected back to the eye.

Politzer believes[1] that we can form no conclusions as to changes in the cavity of the tympanum and membrana tympani, from changes in the size and shape of the light spot, but I cannot indorse this view. In the first place, if changes have taken place in the outer layer, or layer of epidermis, the reflecting power of the membrane is nearly removed, and there is no light spot. Its absence certainly indicates changes in the drum-head. Again, if it be smaller than usual, or if it can be changed in form by the Valsalvian experiment, or by other methods of inflating the middle ear, I think we may draw quite positive and valuable conclusions as to the traction exerted by the malleus, and as to the inclination of the membrane. I do not deny that we may find an irregular or small light spot on a person with normal hearing power; but I believe that such a state of things is rare, and that its shape and size will be found to be, in the majority of cases, a pretty fair guide in a general way as to the loss of function. From the notes of 94 ears affected with chronic non-purulent inflammation of the middle ear, seen at the Manhattan Eye and Ear Hospital, and recorded by Dr. D. Webster, it is recorded that—

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[1] The "Membrana Tympani," translated by Mathewson and Newton, p. 27.

In 59 the light spot was present.
35 " " absent.
9 " " normal.
44 " " smaller.
2 " " larger.
4 " " divided (i. e., 2 or more light spots existed).

Voltolini[1] claims that Politzer and Helmholtz are not altogether correct in stating that the walls of the canal have much to do with the formation of the light spot. He says that the membrane must be brilliant, and that it must be of concavo-convex shape, in order to exhibit the triangular spot of light.

Changes in Mobility.—If a person, having normal hearing power, forces the air into the cavities of the tympanum by a prolonged inspiration and expiration, with the nostrils closed, he has performed the Valsalvian experiment for testing the permeability of the Eustachian tubes, and, on examination during this act, we find that the membranes moved outward and then inward. This change takes place, in a healthy membrane, chiefly at the apex of the light spot, or extremity of the malleus, but it may occur in other parts. In the catarrhal form of affections of the middle ear, the mobility of the drum-head is not affected to any extent. It may be even preternaturally movable. In the proliferous variety, however, adhesions are apt to occur between the malleus and the membrane, and between the other ossicula, and these will seriously affect the normal movements of the drum-head and the chain of bones. It is true, however, that mere swelling of the membrane, such as obtains in the second stage of the catarrhal form, will, to some extent affect the motions of these parts.

It should not be thought, however, that, because a drum-membrane moves, the middle ear is in a normal condition. The membrane may move well, and yet the most serious changes may have taken place in the cavity behind it. Patients who suffer from impairment of hearing have pretty generally learned the Valsalvian test or experiment, and, when they are so deaf as not to hear ordinary conversation at all, and have been so for years, they will often triumphantly, and with great skill, show the examiner how well they can blow air into their ears, as evidence that there can't be very much the matter with them after all. The promulgation among the laity and profession of the valuable character of this experiment has harmed many ears. It is an experiment simply. Its chief value belongs to the observer. It is an abuse of it to make it a method of treatment. It can be theoretically demonstrated that it is even a somewhat, although slightly, dangerous experiment to persons disposed at all to congestion of the head and neck, but this danger is not great enough to lead the practitioner to wholly abandon it as a means of treatment, were it not, as I believe, almost useless therapeutically, and dangerous to the integrity of the tension of the membrana tympani. I very often see patients who have learned this method of treatment, and, having believed that no harm could ensue from a very frequent performance of the experiment, have been in the habit of inflating the membrana tympani several times a day. A membrane that has been thus treated becomes very flaccid, and flaps to and fro, at every swallowing motion, like the sign-board of a country-inn on a windy day.

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[1] Monatsschrift für Ohrenheilkunde, Jahrgang 6, No. 8.

CHANGES IN THE EUSTACHIAN TUBE.

Having considered the appearance of the drum-heads in cases of chronic non-suppurative inflammation of the middle ear, we have next to examine the Eustachian tube and pharynx, and note the changes which appear there. At this point the boundary-line may be distinctly drawn between the catarrhal form and the proliferous form of inflammation. In the former class of cases, the pharynx and Eustachian tube show marked evidences of morbid action; while in the latter there are scarcely any changes in the pharynx and often no very striking ones in the Eustachian tube. The pharynx, in a true case of catarrhal inflammation of the middle ear, is found in one of the following conditions:

There may be great swelling of the pharynx and of the tonsils, with or without increase in the amount of secretion. There may, however, be excess of secretion without any considerable swelling. In such cases the patient is usually very conscious of the trouble in his throat. He may, however, not be aware of any pharyngeal affection, and yet have a pharynx that is considerably relaxed and swollen. If these two symptoms be not present to any marked extent, we usually find minute round elevations scattered over the surface, or grouped in an arch under the uvula. These constitute the condition known as *pharyngitis granulosa.* The pathological condition is a stoppage of the secretions and subsequently hypertrophy of the structure. This affection is called by some authors chronic follicular pharyngitis, and its more advanced stages glandular hypertrophy; but I prefer the simple nomenclature of pharyngitis in the stage of increased secretion and swelling, and granular pharyngitis when these characteristics of the inflammation are less prominent, but where the granulations or hypertrophic glands are very marked in appearance. If the tonsils are not enlarged, they often exhibit, by a jagged appearance, the evidence of former disease. The rhinoscope often exhibits the same condition of the mucous membrane about the mouths of the Eustachian tube. Dr. O. D. Pomeroy[1] characterizes these appearances as follows, viz.:

"I. Mucus in the mouth of the tube, with or without greenish or grayish mucus clinging or adherent to the post-nasal septum, and occasionally filling the nares.

"II. Increased redness in and about the mouth of the tube, or paleness of the mucous lining of the part.

"III. An œdematous condition of the parts near and in the mouth of the tube, resulting in more or less of swelling.

"The swelling in the region of the tube, the result of hyperaminia or œdema, may—1. So far obliterate the mouth of the tube as to cause it to appear as a minute dimple, or obliterated entirely; or—2. Produce so much swelling of the collar-like surrounding of the tube as to greatly exaggerate it. 3. Increase the elevation which separates the mouth of the tube from the fossa of Rosenmüller. 4. Enlarge the posterior extremities of the middle and inferior turbinated bones, and produce a malposition in posterior nares, and give it a rough and uneven outline. 5. Cause a ring-like swelling around the tube, rough, red, and macerated-looking.

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[1] Letter to writer.

"IV. Granulations similar to those found in the pharynx in granular pharyngitis near the mouth of the tube.

"V. Polypi in the posterior nares and more frequently situated on the turbinated bones.

"VI. An apparent diminution in the mobility of the lips of the tube during contraction of its muscles.

"VII. Whitish striæ, indicating cicatricial degeneration of the proper substance of the mucous membrane in the region of the Eustachian tube."

Very many of the patients who then suffer from pharyngeal and naso-pharyngeal inflammation scarcely speak of it when asking advice in regard to the disease of the ears, and it is only on close questioning that they will admit that they are annoyed by the accumulation of mucus in the throat, causing frequent expectoration, hawking, and the other symptoms of chronic pharyngeal catarrh. At other times the catarrh, as they term it, is the great burden on their minds, and they talk freely of the stuffed feeling in the head, and describe their symptoms in a graphic style that has been obtained by a diligent perusal of the advertising columns of the daily newspapers.

The Eustachian catheter is a very valuable means of diagnosticating the changes not only in the cavity of the tympanum, but also in the naso-pharyngeal space. In passing this instrument through the nostrils it should always be used as a sound, and the condition of this portion of the mucous tract carefully noted. The inferior meatus is often found swollen and even granular. In some cases nasal polypi may exist. The catheters usually employed are of three sizes, but it will be found that still a smaller than the one usually employed is needed, not on account always of the swelling or hypertrophy of the membrane, but of some abnormal position of the septum which renders the canal very narrow and irregular. The way in which the air passes through the catheter into the tube is deemed by many as of much importance in the diagnosis of chronic catarrhal or plastic inflammation. The passage of a full and strong current almost necessarily precludes the idea of any considerable change in the calibre of the Eustachian tube, unless it be atrophy of its tissue which sometimes occurs.

The mere fact that air can be made to enter the tube either by the Valsalvian experiment, the Eustachian catheter, Toynbee's or Politzer's method; in other words, the fact that the Eustachian tube is open, so that the patient perceives the fulness in the ears which shows that a column of air has been forced against that already in the middle ear, is no evidence whatever that the ear is in a healthy condition. In my own experience, closure of the Eustachian tube is one of the rarest of cases. I mean, by closure, such a state of things that, by trial of the catheter and Politzer's method, the air cannot be made to enter the ear.

In order to test the permeability of the tubes, the subsequent examination of the membrana tympani and the patient's own sensations become important evidences. The membrana tympani may, however, become reddened by the mere application of instruments to the external meatus, and to the mouth of the tube, so that we must be careful to exclude such sources of error.

The diagnostic tube of Toynbee, by means of which we listen to the sounds of the air passing through the tube up to the drum-head, is also a valuable assistance in determining the patency of the tube and the size of the cavity of the tympanum. Kramer claims to determine, by the use of the diagnostic tube, the "exudation" and the width of the tube. If there is a piercing, *durchgehendes*, near, rattling, vesicular sound, he then diagnosticates the existence of a free exudation. If, however, a sonorous, near, vesicular sound, it is proof that there is no free exudation; if there is a distant, muffled, vesicular sound, then we are dealing with sub-mucous exudation, which is united to free exudation, and so on. I only quote these from the last edition of Kramer's book, to show to what lengths a man may go in riding a hobby, for Kramer's hobby is the diagnostis of the affections of the middle ear, by the sounds heard through the diagnostic tube, caused by blowing through his catheters.

The true value, however, of the diagnostic tube is only in connection with the other means that have been mentioned, the appearance of the membrana tympani, and the patient's own sensations.

Pathology.—After the clinical investigations of Kramer and Wilde, the first great advance that was made in otology were the dissections of Toynbee. The museum of preparations illustrative of diseases of the ear, in London, is a memorial to Joseph Toynbee, that will be as enduring as scientific truth. From the time of Toynbee until now, the dissection of ears of those who were known to be deaf continues; and from the labors of Von Tröltsch, Schwartze, Voltolini, Hinton, Gruber, Orne, Green, Moos, and others, we have verified on the dead bodies diseases that have been diagnosticated in the living one, or, I should rather say, we have learned, from the inspection of the ears of the cadaver, what is probably the condition of ears in life.

The pathological appearances in chronic catarrhal inflammation are—

1. Collections of mucus distending the cavity of the tympanum.
2. Thickened mucous membrane.
3. Filling up of the cavity by lymph.

In the form of inflammation that shows a higher formation than the catarrhal, there are changes which may have resulted directly from the increase of secretion, but this stage having been completely passed over, or, in some cases, never having existed, these pathological appearances may be properly classed together as evidences of what I have ventured to designate the proliferous form. They are:

1. Connective-tissue formations in the cavity of the tympanum.
2. The mucous membrane of the tube covered by dense fibrous tissue.
3. Hypertrophy of the bony walls of the tube.
4. Obstruction of the tube and cavity of the tympanum by dense fibrous tissue.
5. The stapes bone completely and firmly anchylosed to the margin of the fenestra ovalis.
6. An exostosis on the inner surface of the neck of the malleus.
7. Malleus and incus anchylosed together.
8. Firm bands of adhesions in the mastoid cells.

9. False membrane on the tendon of the tensor tympani muscle.

10. Partial obliteration of the cavity of the tympanum from adhesions of the membrana tympani to the labyrinth wall.

11. Hyperostosis of the petrous bone, and anchylosis of both stapes.

12. Atrophy and fatty degeneration of the tensor tympani.

These are actual appearances, of individual cases taken from Toynbee's catalogue and from the writings of the other authorities whom I have mentioned; some of them are perhaps consequences of suppurative inflammation, although I have been careful to exclude all cases in which there was loss of the membrana tympani, or positive evidence of a suppurative process.

Gruber's[1] account of the pathology of otitis media hypertrophica is, that, "from some cause or other, there is first a great hyperæmia with distention of the membrane, and in part the new formation of blood-vessels, and increase of the intercellular fluid. The connective-tissue corpuscles are increased. The tissue of the inflamed mucous membrane is less moist than in the catarrhal form. The new formations or new elementary formations go on to a higher development. The most various adhesions may occur, or a soft connective substance appears which is either evenly spread over the whole portion that was originally inflamed, and thus leads to hypertrophy of the mucous membrane, or it may go on to granular formation. Many of these new formations may also undergo regressive metamorphosis, they may undergo molecular disintegration, become fatty, and be absorbed.

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CAUSES OF CHRONIC NON-SUPPURATIVE INFLAMMATION OF THE MIDDLE EAR.

I have endeavored, in recording the histories of about fourteen hundred cases of aural disease observed in private practice, to give the probable remote and proximate causes. These are only to be obtained by a strictly-observed system of cross-questioning, for by far the greater number of patients ascribe their disease to causes which are certainly very remote if not doubtful, and to others which have certainly had no influence.

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[1] Lehrbuch der Ohrenheilkunde, S. 516. Wien, 1870.

Thus patients will assert that their loss of hearing results from cold, when they cannot remember that they ever had a severe cold affecting the ears, but they conclude that it must have been a cold; others, again, declare that their throats have always been well, that they seldom require to use a handkerchief, and yet an examination will reveal a bad condition of the nasal pharyngeal mucous membrane.

Judging as well as I am able from my experience in public as well as private practice, I am disposed to set down the following as among the most probable causes of chronic non-suppurating inflammation of the middle ear:

Remote.—1. A feeble state of the system, due, for example, to inherited or acquired syphilis, phthisis pulmonalis, etc.

2. Defective hygienic management, e. g., neglect of bathing, want of exercise in the open air, etc.

Proximate.—1. Repeated attacks of acute catarrh of the pharynx and middle ear, a disease popularly known as earache.

2. Naso-pharyngeal inflammation.

3. Diseases of the lungs and bronchial tubes.

These proximate causes are chiefly to be made out in the catarrhal form of chronic inflammation, while in the proliferous form the practitioner is often greatly in doubt as to what may have been the origin or exciting cause of the insidious affection, which goes on so steadily to change of structure and loss of function. Indeed, we are often obliged to be content to acknowledge the fact of change of structure without being able to definitely assign a cause for it. The history of coryzas and earaches, and of chronic sore-throats, is usually distinct enough in chronic catarrhal inflammation, and, if not the history, then the appearances of the pharynx, and the results of tactile investigation of the tubes, are sufficient to allow us to determine just what kind of a process has been going on.

It would be interesting to accurately trace the origin of these proximate causes. We should find, I think, that the most of them were due to neglect, or improper management, e. g., the heads of some children are often vigorously washed but never thoroughly dried; they are allowed to remain in water unduly long; their legs and chests are left uncovered in weather in which strong men are clad in beaver-cloth, and women in furs;

they play about the streets, and sit down, when tired and warm, on the damp and cold stone steps of city-houses; they are held thoughtlessly by an open window on a cold day; they are warmly clad by day but insufficiently covered at night; in short, the temperature of the body is not properly regulated, and a pharyngeal catarrh passes in an instant to the tympanic cavity, where it is an acute catarrh. If it does not go on to suppuration, it is half recovered from under the use of anodynes to the outer surface of the drum-membrane; once here, a thickening is left which forms a good basis for a case of gradual and mysterious middle-ear trouble, and with no known cause.

With older people a slight and neglected coryza or pharyngitis is followed by a fulness in the ears, that "will wear away," and which does wear away in part, but, if it occurs in persons who have no good hygienic habits in such matters as bathing, temperance, and so on, it leaves behind a residuum of hypersecretion or proliferation, which, as has been said, is but the foundation for repeated attacks, and, finally, of permanent thickening.

The syphilitic catarrh of infants and young persons is the frequent cause of an affection of the middle ear, which, unlike its frequent companion, interstitial keratitis, is one of the worst forms of disease in the obstinacy with which it resists all treatment. The eyes may, and generally do, get well, but, if once the tympanic cavities be attacked, intra-auricular adhesions occur, the membrana tympani is drawn inward, the nerve is secondarily involved, and the loss of hearing often becomes almost complete.

Just how it is, that pregnant women are so often affected by a proliferous inflammation of the middle ear, I am unable to say, but it is a fact that many women have told me that they traced their impairment of hearing to their first pregnancy, and, that they became worse at the birth of each child. I am now in the habit of warning such patients that great attention should be paid to their throat and ears, by means of gargles and Politzer's method, during the period of utero-gestation. It is the proliferous form of inflammation, and not the catarrhal, which I have usually observed during such cases.

The causes given by patients themselves, taken from my note-book, are as follows: "Stuffy sensations in the head; going in the water very frequently; severe colds in the head; when a child, the ears would stop up, and would not hear well for a few days. The first manifestation was a roaring noise heard at night; chronic sore-throat; great deal of earache; all the colds from which I suffer are in the head; excessive grief; a sound like that of locusts was the first indication of trouble; by accident I discovered that I could not hear from one ear; I have always had a great deal of sore-throat; diphtheria; typhoid-fever." One patient gave a graphic account of a gradual loss of hearing in the following words: "Ten years ago I observed that I could not hear the church-bells, and, in four or five years, it began to be difficult for me to hear conversation." Another ludicrously attributed his chronic catarrh to exercise upon a gymnastic pole. Another was quite sure that it resulted from great mental anxiety. These are fair specimens of the causes assigned by the patients or their friends for cases of the variety of aural disease now under consideration. Some of them are far from being true causes, although the most of them may be admitted as having at least placed the system in such a condition that catarrhal disease or proliferation of tissue was likely to result. It is undoubtedly true that any great mental depression may cause an attack of pharyngitis in a person disposed to it, and that such a long-continued state of mind will make such an affection incurable.

We may, perhaps, sum up our knowledge of the causes of chronic, non-suppurative disease of the middle ear, by stating that they are such as dispose to inflammation of mucous membranes. Our increased knowledge of the pathology of these will serve us in good stead in investigating the affections of a part which is thoroughly lined by this structure.

Treatment.—At the beginning of this paper, a table was given, showing at about what time in the history of their disease the patients consulted the writer. It may be safely asserted that the most of these persons never underwent any serious or rational local treatment until that time, so that we may assume that the greater number of persons in the United States who suffer from the form of disease under consideration are in the habit of waiting for a period of from five to twenty years before they attempt to get relief.

We must certainly diminish the number of these cases before we can hope for brilliant results. The neglect of the therapeutics by the last and the preceding generation must recoil upon us. Patients come very late for advice about their ears, because they have been taught, not by the laity, but by wise and skilful physicians, that it is not prudent to meddle with the ear; that they will outgrow its diseases, as soon as their constitution is invigorated; if girls, that, when the menstrual function comes on, they will be all right, and so on, while, during this time of delay, adhesions between the membrana tympani and the ossicula, and the walls of the cavity of the tympanum, have been forming, hypertrophy of the mucous membrane and atrophy of the tendons of the intra-auricular muscles—in short, all the changes that we have noted above—have occurred.

In the text-books of Wilde and Toynbee (books that have had a wide circulation in this country, and have done much to call attention to the ear) constitutional treatment figures very largely in the treatment. The use of mercury and iodide of potassium is strongly insisted upon. We, of the present time, have grown very skeptical about the constitutional treatment of such affections as chronic catarrhal and proliferous inflammation of the middle ear. No thoughtful practitioner will attempt to disregard the general indications of a cachexia, or of a debilitated system, in which there is chronic inflammation of the mucous membrane of the middle ear; but the time has probably gone by when a person in fair health, suffering from chronic aural catarrh, and who has no constitutional taint, will be treated by alterative doses of the bichloride of mercury, followed by the iodide of potassium. Ample experience has shown that we can do nothing for these cases by such a treatment, and I may say that it has been abandoned in the infirmaries and hospitals, where large numbers of cases of aural disease are seen. The constitutional symptoms were usually those of a coryza or acute catarrh, and accompanied the earliest stages of a disease which finally settled down into an insidious and chronic process.

The causes of these forms of disease suggest a kind of constitutional treatment, however, which should never be lost sight of. Every thing that will render a patient more vigorous, and less likely to take cold, will assist materially in curing or alleviating a chronic aural catarrh. We shall thus find much to do, in the way of correcting improper habits of life, in regard to bathing, exercise in the fresh air, sleeping apparel, and the like. Hence the Turkish bath, sponge-bathing, walking, riding, boat-rowing, iron, and so on, become prescriptions which the otologist will be called upon to give very frequently, if he properly appreciates cause and effect. It is only against specific drugs, where there is no specific diathesis, against a routine system of prescribing a constitutional remedy in the vague hope that it may do good, although we do not believe it, that I have been speaking.

We may divide the treatment of the catarrhal from the proliferous form pretty fairly in one respect. In the catarrhal form we must give a great deal of attention to the naso-pharyngeal space, while in the other we need to pay very little to it. Perhaps we may classify the treatment as follows:

1. Constitutional and hygienic.
2. Local bloodletting.
3. Applications to the naso-pharyngeal space (only applicable to the catarrhal form of the disease).
4. Applications to the Eustachian tube.
5. Applications to the cavity of the tympanum.
6. Cutting operations upon the membrana tympani and the ossicula.

The treatment of the pharynx may be classified as follows:

1. Injections of the naso-pharyngeal space.
2. Gargling.
3. Cauterizations.

Injections of the naso-pharyngeal cavity by means of the naso-pharyngeal syringe, I have found very valuable in the treatment of chronic catarrhal inflammation. The solutions I use are common salt, permanganate of potash, gr. $\frac{1}{8}$ ad ℥i, a saturated solution of chlorate of potash, tar-water, etc. Great masses of muco-purulent material are often dislodged by this treatment, even in cases where ordinary inspection does not show that any has collected. The nasal douche is very frequently used for the same purpose, but it is a means of treatment that is attended with considerable danger to the ear, even when all proper precautions are taken. Gargling is a very efficient means of cleansing the pharynx, if it be performed in the manner advised by Von Tröltsch. The fluid is held in the back part of the mouth, the head being thrown well back, the nostrils closed, and then the motion of swallowing is gone through with. With a little practice, the patient will become very proficient in this method. Those who are skeptical as to the virtue of gargling, and who claim that the process does not cause the fluid to wash the pharynx, will be convinced of the contrary by the following simple experiment: Let the posterior wall of the pharynx be painted with the tincture of iodine, and then a gargle of starch-water be used by Von Tröltsch's method, and the characteristic reaction will be found in the ejected fluid.

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The Treatment of the Eustachian Tube.—The use of the Eustachian catheter stands in the front rank in this respect. It is difficult to say whether we treat the tube or the cavity to which it leads by the means of this instrument. We may often do much good in improving the hearing of a patient by the introduction of the instrument between the lips of the tube, even when no air, vapor, or fluid, is introduced through it. After such a procedure it is much more easy to inflate the ear by Politzer's method. Some have rather hastily, as it seems to me, concluded that all, or the greater part of the effect produced by the catheter, might be had by applications to the mouth of the tube, and have discarded the catheter, but I become more and more convinced, after ten years of pretty steady exprrience in its use, that the Eustachian catheter is essential in the treatment of chronic non-suppurative inflammation of the middle ear. The agents to be introduced through it are:

Atmospheric air,
Vapors,
Fluids,

Bougies,
Electricity.

I have placed common atmospheric air first, because I regard it as the most important of the agents to be employed. It is, however, not as efficient as in subacute or acute aural catarrh, where its effects are almost magical. In fact, it may be claimed that there are no idiopathic affections for which relief is so immediately obtained as catarrhal inflammation of the middle ear, where inflations of the tympanic cavity with simple air are often sufficient to cause a patient, to whom the world of sound is again open, to shed tears of joy.

Of vapors, I attach most importance to vapor of water, steam, an old remedy, but one which had most undeservedly fallen into disuse in this country, until its use was restored by myself.

. . . .

Fluids.—After all the experiments to determine whether fluids forced into the tube through the catheter actually reach the cavity of the tympanum, it is, I believe, pretty conclusively settled that they do, and they may have a decided effect upon the lining membrane of this part.

I am in the habit of employing Politzer's method of inflating the drum-cavity immediately after the use of the Eustachian catheter, in all cases of chronic disease of the middle ear, but I cannot believe that it is a substitute for the catheter. It is very often found that no impression can be made upon the tube or middle ears by the use of Politzer's method alone, but after the catheter has been once passed into the mouth of the tube, and some muscular spasm set up in the abductor and dilator of the opening, that this means of treatment becomes effectual at once. It is not well, however, to place the air-bag in the hands of the patient and advise him to use it. Such advice will usually be over-regarded, and, instead of inflating the ears every other day, it will be done every hour perhaps. Besides, patients are often very unsuccessful in their attempts to drive air into the ears. Of course there are cases in which this system of self treatment must be adopted, or none at all can be undertaken ; but physicians who treat aural disease soon learn that, in order to any success, the treatment must be carried on by the medical adviser himself, and not be delegated to lay authority. . . . .

Before passing on to a consideration of the operative treatment for this class of aural affections, a word or two should be said as to the time for which a case should be treated. Inasmuch as we cannot hope, in many of the cases, to do more than arrest the progress of disease and perhaps improve the condition, since we cannot dismiss them as *cured*—that is to say, with the hearing perfectly restored, the tinnitus aurinm gone—we desire to know how long shall we treat the ears locally. The general hygienic treatment, such as the frequent employment of baths, of a gargle, the exercise of great care to keep the extremities warm, to avoid taking cold, and so on, should be kept up during a patient's life, and he should be told at the first consultation that he has a life-long warfare to engage in, unless he desires to end his days with the use of an ear-trumpet.

But we cannot keep up a local treatment of the Eustachian tubes and pharynx indefinitely. Those who believe that a catarrhal pharynx and nares can be thoroughly cured in our climate, that a disposition to colds in the head can be effectively subdued by the use of the spray of nitrate of silver, or the spray of any other agent used by means of the most perfect apparatus, will continue to use these means of local treatment until the end is accomplished. But those who have been less successful in such attempts, must fix some limit to the time of treatment. If it be proposed to get the confidence of a patient suffering from chronic non-suppurative middle-car disease, which is progressive in its character, it is proper to tell the whole truth at the first consultation and say that we have no hope of making him hear *very well* again. It is only a question of arresting the progress of the disease, and perhaps of increasing the hearing power. To this end they should receive local treatment about twice a year, until the disease has ceased to progress, for a period of time varying from three to eight weeks, while the general treatment is to be a life-long course. The only reason that these limits of time are fixed is, that I have seldom seen any thing accomplished in less than the shorter time or after the longer term has expired. Very many patients leave us, at the outset, never to return. Some of them cannot leave their families to stay in a large city while their ears are being treated. This difficulty is being rapidly met. In every considerable town reputable and educated men, who have found that there is something more in aural practice than in syringing out the wax and then dropping in glycerine to restore it, are giving attention to otology, and the laity are beginning to reap the fruits of this cultivation of a hitherto barren field.

There is another class, however, whom such advice never reaches. One of their family has been a victim of chronic aural disease for a period varying from two to twenty years, and they have at last, at the request of the family physician, screwed themselves up to the courage of consulting a specialist. They come in town for a day's shopping and call upon the doctor, meanwhile always being in a great hurry, and sending word to the consulting-room that they have come fifty miles to see him. When such advice as I have delineated is given, and the almost bewildered physician sits down to lay out a plan of treatment and correct the improper habits of life that have induced and maintained the disease, he finds that he is dealing with persons who expect magic ear-drops, vibrators, or some mysterious and quickly-acting agent that will restore the hearing in the interim of rest of a New York shopping excursion. Of course, such patients figure in the category of "seen but once, result *unknown*," although in the mind's eye we can set them down as going on slowly but surely to the ear-trumpet, and banishment from social intercourse.

OPERATIONS UPON THE MEMBRANA TYMPANI.

Lastly, we have to consider the cutting operations upon the ear through the membrana tympani.

The reader of otological literature will be almost appalled by the amount of material on this subject. It begins with Cheselden's experiments on dogs, and ends as yet with Weber's operation upon the tensor-tympani muscle. From the mass of authorities I have collected such a history of this subject as will, I trust, enable the candid professional mind to come to a knowledge of the true value of these different proceedings, as far as they have as yet been developed.

I am indebted to a *brochure* by Dr. Hermann Schwartze, of Halle,[1] for the portion of this historical sketch that extends to our own day, although, wherever possible, I have consulted the original authorities and verified, and in some instances amplified, Schwartze's quotations.

1650.—Johannes Riolanus, of Paris, about 150 years before the time of Sir Astley Cooper, who is usually supposed to be the originator of the operation of perforation of the membrana tympani, inquired if it would not be possible to improve the hearing of the deaf, by destroying the membrana tympani. He was led to make this inquiry from the fact that he knew of a deaf person, whose hearing *was restored* by an accidental rupture of the membrana tympani, by means of an ear-spoon.

It is well to remember that, until very recently, there were no exact measures taken to estimate the amount of hearing, and that, consequently, such phrases as "the hearing was restored," "the hearing became perfect," as they occur in ancient books, only mean that the hearing was improved, sometimes very much, sometimes very little.

1722.—About a hundred years later, T. Cheselden, surgeon to St. Thomas's Hospital, London, well known as the inventor of the operation for artificial pupil, actually operated upon dogs, and I quote from his work on anatomy[2] the description of his cases. Speaking of the membrana tympani, he says: "I found it once half open on a man that I dissected, who had not been deaf, and I have seen a man smoke a whole pipe of tobacco out through his ears, which must go from the mouth, through the Eustachian tube, and through the tympanum, yet this man heard perfectly well. These cases occasioned me to break the tympanum in both ears of a dog, and it did not destroy his hearing, but for some time he received strong sounds with great horror."

Cheselden then goes on to say that an anatomist named St. Andre assured him that "a patient of his had the tympanum destroyed by an ulcer, and the auditory bones came out without destroying the hearing." I have only been able to obtain the second edition of Cheselden's works, but Schwartze quotes from the seventh edition, where the author states that he obtained permission to perform this operation, that was then esteemed such a formidable one, upon a prisoner. If the prisoner survived the operation, he was to have his freedom. Unfortunately for science and for the criminal, the proposed subject became ill, so that the operation was indefinitely postponed. Sir Astley Cooper[1] says that such an outcry was aroused, by the inhumanity of the proposed operation, that Cheselden never again obtained permission to perform it.

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[1] Studien und Beobachtungen über die Künstliche Perforation des Trommelfells, Archiv für Ohrenheilkunde, Bd. II., S. 24.

[2] "The Anatomy of the Human Body," London, 1732, p. 250.

1748.—Dienert, of Paris, in a dissertation, recommended the operation for the purpose of evacuating blood or pus from the cavity of the tympanum.

Itard says that Julius Busson proposed the operation six years before this.

The first man who actually performed the operation as a means of benefiting the hearing was a person named Eli, who seems to have been a charlatan.

1760.—For in 1760 Portal and Sabatier, two Paris surgeons, who lived at the same time, knew nothing of his operations. Portal proposed to puncture the membrana tympani, in the cases where it was greatly thickened. Sabatier, on the other hand, proposed to perform it upon a relaxed membrana tympani.

1788.—Wilde quotes a passage[2] from Dr. Peter Degravers, of Edinburgh, who lived in 1788, and who styled himself professor of anatomy and physiology, which shows that he had performed the operation. Degravers says: "I incised the membrana tympani of the right ear with a sharp, long, but small lancet. I left the patient in that state for some time, and afterward observed that it had united. I incised again the membrana tympani of the right ear, but crucially, and, on removing some of the parts of the membrane incised, I discovered some of the ossicula, which I brought out." As Schwartze naively remarks, "There is no account of the results in this case."

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[1] Philosophical Transactions, 1800, p. 157.

[2] "Aural Surgery," English edition, p. 15.

1800.—In the beginning of this century, at about the same time, and independently of each other, Dr. Karl Himly, then of Brunswick, Germany, and Sir Astley Cooper, proposed the operation, especially in closure of the Eustachian tube. Himly had demonstrated to his students in 1797, by experiments upon the human cadaver and living dogs, that the operation could be easily and safely performed, but he did not perform the operation on the living subject until 1806.

He reports a brilliant result in one case only, in a person suffering from syphilitic ulcers of the pharynx, who had been deaf for years from closure of the Eustachian tube.

An account of Sir Astley Cooper's celebrated operations is given in the Philosophical Transactions of the Royal Society of London, published in the year 1800, and this volume also contains Mr. Everard Home's lecture on the membrana tympani. Sir Astley Cooper's first paper is a very careful and exact account of the case of a medical student at St. Thomas's Hospital, who had lost both membranæ tympanorum, but who, nevertheless, could hear ordinary conversation.

This observation led the way to the performance of the operation for the relief of impaired hearing. The only indication that the great English surgeon spoke of was closure of the Eustachian tube. This arises from several causes, which he enumerates:

1. A common cold affecting the parts contiguous to the orifices of the tube, and thereby preventing the free passage of air into the tympanum.

2. Ulcers in the throat, from the scarlet fever, which in healing frequently close the Eustachian tubes.

3. A venereal ulcer in the fauces, by the cicatrix it produces, may cause a closure of the tube.

4. An extravasation of blood in the cavity of the tympanum.

Mr. Cooper reports four cases:

Case I.—A woman, thirty-six years old, who had been affected for eight years. The deafness arose from enlargement of the tonsil glands; a puncture was made, and, while she stayed in the consulting-room for one half-hour, she could hear ordinary conversation.

Case II.—Ann D., age not stated, so deaf as not to hear words unless spoken close to the ear. She had been affected for six weeks. She could hear a watch when pressed upon her ear. After the puncture she could hear the watch several feet.

Case III.—J. R., aged seventeen. The hearing had been impaired since birth. There was an imperfect state of the fauces, so that he could not blow his nose. The Eustachian tubes had no openings into his throat. Puncture of the membrana tympani produced such a confusion that he nearly fainted, but in two minutes he recovered, and, two months after, his hearing continued perfect.

Case IV.—A person was sent to Mr. Cooper, who had received a blow upon the head, which had occasioned symptoms of concussion of the brain, and was attended with a discharge of blood from each ear. He recovered from all the effects of the blow but the deafness. Blood was found in the meatus by Mr. Cooper. After clearing this away and perceiving no benefit, suspecting that a quantity of blood was lodged in the tympanum, in a few days he punctured the membrana tympani. Blood mingled with the wax was discharged for ten days, during which time the hearing was gradually restored.

In closing his paper, Sir Astley states that little pain is felt in the operation, and no dangerous consequences follow.[1]

The Valsalvian experiment was the means by which he determined whether the Eustachian passage was open or not, for he says that, when the experiment succeeds, the tube is open. Besides this, the patient should be able to hear a watch placed between the teeth or on the temporal bones. Cooper published his four cases of good results, and, according to Schwartze and Frank, he was soon inundated by deaf persons from all parts of Europe. He then operated on fifty more cases, but the results were either slight, null, or they lasted for a short time only. Cooper then declined to see deaf patients, on account of the fact that he was doing very little good, and also because his fame as a surgeon was suffering from his reputation as an aurist. After the lapse of more than seventy years, the calm, scientific character of Sir Astley Cooper's writings on this subject stands in striking contrast to the charlatanism of some of those who followed him in this operation.

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[1] Sir William Wilde states that, within a few months of his death, Sir Astley exhibited the greatest interest in this subject, and left his consulting-room full of patients for a long time, to send for a man in Bond Street, upon whom he had operated, in order to exhibit him to Mr. Wilde.—*Vide Dublin Journal.*

After Cooper's operations, a great interest was excited in France on this subject, and, according to the medical journals of the time, quoted by Schwartze, Riber, of Bordeaux, Maunoir, of Geneva, and others, operated, but with no permanent results.

In Germany, also, the same interest was created. Michaelis, a professor in Marburg, informs his friend Hunold, of Capel, that he had operated on one case successfully. Hunold then proceeded to puncture every membrana tympani to which he could get access. Finally, Hunold records that he has had the brilliant result of curing or improving seventy cases out of a hundred. Subsequently, it was shown by others, that these results were not only exaggerated, but, that they were not even at all in accordance with truth. Of Michaelis's sixty-three cases, in forty-two there was no result whatever; while in twenty-one, or one-third, there was greater or less improvement. But, of all these, in only one was there a permanent result six years after; *perhaps* the benefit was permanent in three other cases.

Schwartze says that after Hunold's marvellous accounts of his successful results from perforation of the membrana tympani, the operation became the fashion, and every one, who did not have the finest hearing, allowed the drum-heads of the ear to be pierced. Even the poor deaf-mutes had their drum-membranes perforated. Fashions in medicine are not confined to our own time.

To stem this tide of charlatanism, Karl Himly, professor in Göttingen, wrote a commentary upon the operation, and showed that it was only in exceptional cases that it was of any value. His paper excited so much attention that the operation was not heard of for a long time.

In England, as we have seen, Cooper abandoned the operation and the otological practice. Saunders opened an aural clinic in 1804, but soon closed it on account of the poor results of treatment. He speaks of one case of perforation in which a good result was obtained. After him came Curtis, who talks of the operation in very general terms, but without furnishing cases. Buchanan also promises to describe his cases, but he never did; and Schwartze thinks that Degravers, the Edinburgh professor, from whom I have quoted, and Stevenson, are not to be relied upon.

In France, Itard, Saissy, Boyer, and Deleau, wrote upon this subject. Itard was wise enough to perforate a drum-membrane of a deaf-mute who was suffering from a cavity of the tympanum filled with tenacious masses of mucus, and succeeded in thus removing it by syringing. This was an anticipation of Mr. James Hinton's operation. In one hundred and seventy other cases, there was absolutely no result. He calls attention to the fact that permanent suppuration may occur even when the operation is very carefully performed.

1822.—Saissy, of Lyons, in his work on the ear, speaks guardedly of the operation, and of only one case of perfectly good result.

Schwartze gives very little credence to Deleau's account of his successful results. He claims to have improved eighteen out of twenty-five deaf persons and deaf-mutes, by the operation.

Hendriksz, of the University of Gröningen, in 1828, in an inaugural thesis on the subject, which Schwartze used in his historical sketch, states that in the institutions for the deaf and dumb, in Berlin, Vienna, and Gröningen, this operation was frequently performed. In Gröningen, eighty-one deaf-mutes were operated upon, of whom seventeen received for the moment a more or less decided improvement. We hear nothing then of the operation for twenty years, until Hubert Vallevoux, in 1843, wrote an essay upon the danger attending it. He speaks of two cases of death from it. Wilde[1] says that Dr. Butcher, of Dublin, reported two cases with a view of showing the ill-consequences resulting from the performance of the operation, and related the cases of two young persons, a man and a woman, in both of whom it would appear that death ensued from puncturing the membrane. In the first instance, the only history of the case is that, prior to this period, she got a severe cold, with a swelling of the glands of the neck. No account is given of the cause or origin of her deafness, the condition of the membrana tympani, why the operation was performed, in what manner, by whom, or with what instrument. According to Wilde, all that we know is, that "catheterism of the Eustachian tube was performed, and said to fail; hence it was agreed that the membrane of the tympanum should be pierced, a small piece being drilled out of the membrane of the right side." No exact account of the operation and no names of the witnesses are given. Inflammation ensued, and *four months after* she died, when the petrous bone was found roughened and softened, and the membrana tympani entirely destroyed.

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[1] "Text-Book," English edition, p. 297.

This case, certainly, with such a history, can form no text for a homily against paracentesis of the drum-membrane.

The second case is equally indefinite. Wilde says all that is known of the case is, that he applied to a surgeon and had his tympanum pierced, "but why or whether with a gimlet or a punch, a trocar or a probe, we are not informed. At first the hearing improved, and then relapsed. After some time, head-symptoms set in, and the man died in six weeks."

On the *post-mortem* examination, the brain and its membranes were found in an inflamed condition, and a small abscess in the anterior lobe of the brain, on the same side upon which the puncture was made. The cause of the deafness in this case was found to be a small tumor, about the size of a bean, lying on the acoustic nerve.

Paracentesis of the membrana tympani was certainly not indicated in this case, and the two together form no more of an argument against the operation than the indefinitely-reported cases of death from the use of the Eustachian catheter do against the use of that instrument.

The treatises on diseases of the ear, of Kramer, Rau, Bonnafont, Toynbee, and Von Tröltsch, add very little to our knowledge of this subject:

1. The first indication which was set down by the old authors, was closure of the Eustachian tube. Since the scientific use of catheters and bougies, this indication disappears from those under which it is now performed. In the very rare

cases in which there is an impermeable stricture from cicatrization, it would be, however, a proper operation.

2. Thickening of the membrana tympani was another prominent indication of the old authors—not of Cooper, however. We now know that a thickening of this membrane that is confined to the outer layers may be removed by appropriate local applications, while one that has extended to the fibrous, or mucous layer, or both, is nearly always accompanied by thickening of the whole lining membrane of the cavity of the tympanum, so that this indication may also be dismissed.

3. A collection of blood, pus, or mucus, in the cavity of the tympanum is, then, the only indication of the old authors which may fairly be said to be up to the present standard of knowledge. These collections are readily diagnosticated in all acute, and subacute cases, and still remain good indications for perforation of the membrana tympani.

From this chaos of illy-defined indications and imitative experiment, there came out one fact in proper form. That one fact was this, that it was preëminently proper to perforate the membrana tympani in order to remove mucus, blood, or pus, which could not find an exit through the Eustachian tube. Sir Astley Cooper's favorable cases showed this fact. Itard's deaf-mute was also another illustration of its truth, but, throughout all the history of these cases, we do not find, until we come down to Hermann Schwartze, of Halle, that one writer had been able to select this single grain of wheat from the chaff. Schwartze saw what had been shown by the cases that were published, and in his article[1] reviewed the operation of paracentesis, but chiefly applied it to acute disease, where these accumulations of mucus, blood, or pus, are likely to occur. The operation is now well established as a means of treatment, but it is not within the scope of this paper to speak of it as applied to acute inflammation.

Schwartze has lately published one hundred cases in which he has performed a paracentesis of the membrana tympani. Before passing on to review the methods of writers who, since Schwartze's paper was published, have modified the simple operation and enlarged its field, so as to cause it to play a great part, as they claim, in curing chronic cases of catarrhal and proliferous inflammation, I will venture to criticise Schwartze's table of results. Of his one hundred cases, only two were in persons over fifty years of age, and only seventeen were over twenty. The remaining eighty-one were under that age, and forty-six were between one and ten years. In America, our cases of chronic non-suppurative inflammation are usually very tractable without paracentesis. Again, in thirty-four of the cases, the disease, whatever it was, had not existed for a year. There were only ten cases where the aural affection had lasted between five and ten years, and in six cases only, more than ten years.[1]

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[1] Archiv für Ohrenheilkunde, Bd. II., p. 36.

These statements show that we have not as yet, even in repeated paracentesis of the membrana tympani, found the remedy for the class for which we in America are most anxious—old and neglected cases of chronic proliferous inflammation. Schwartze's contributions, in other words, principally affect acute and subacute disease. I think he should have drawn the line a little more distinctly between the chronic and subacute cases.

1845.—It was thought by many that, if a permanent opening could be kept in a drum-head, the great desideratum was attained. Bougies were placed in an opening made with a small trephine, and, when it was found that this excited too much reaction, a gold tube, three lines long, and having a little ridge on both ends, was inserted, with a view of keeping up a permanent opening.[2] This was years before Politzer introduced his eyelet. In 1868, Politzer had a case in which he placed such an eyelet in a cicatrix which he had incised, with benefit. In this case, it was of use. It has proved, however, to be only beneficial in very exceptional cases, where, perhaps, repeated paracentesis would do quite as well. Several cases of accident have occurred in its use. I saw one case in which the opening had closed and left the foreign body in the cavity of the tympanum. I saw the case but once. Dr. Noyes[3] reported another case, where, in attempting to insert the eyelet, it was lodged, not in the membrana tympani, but in the cavity of the tympanum. Eighteen days after, at the patient's solicitation, he was placed under chloroform and the eyelet removed by making quite an opening in the membrana tympani. The suppuration from this opening ceased, and the opening closed in sixteen days. The hearing distance was improved from contact with the meatus, to three and one half inches while there was an opening in the membrane; when the opening closed, the hearing went back to the first-named point. This accident of escape of the eyelet into the tympanum is thus one quite likely to happen, either at the time the membrane is pierced, or subsequently. The suppuration which occurs is more apt, however, to force the membrane into the auditory canal than into the meatus.

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[1] Archiv für Ohrenheilkunde, Bd. VI., p. 195.

[2] Frank's "Practische Anleitung," Erlangen, 1845, p. 310.

[3] Transactions of American Otological Society, third year, p. 57.

I have been content to allow my professional brethren to experiment with this operation, rather than undertake it myself. The published results have not seemed to me to justify the procedure of placing a foreign body in the membrana tympani.

1867.—Wreden,[1] of St. Petersburg, went far beyond the propositions to make an opening in the membrana tympani, and excised a portion of the handle of the malleus ; inasmuch as the chief vascular supply of the membrana tympani was along the handle of the malleus, Wreden believed, and with correctness, that, by cutting this off, there would be less probability that the cicatrix would form. He says that, when he removed two-thirds of the membrana tympani and the handle of the malleus, he never saw the opening fully close. This operation never found much favor, for the reason that it proved to be dangerous to the hearing and even to the life of the patient. It often excited an otitis suppurativa of so severe a form as to destroy the remainder of the hearing power. It may be doubted, too, judging from analogous cases occurring accidentally, whether even such an opening would not heal. The regenerative power of the membrana tympani is indeed marvellous. We need, however, spend very little time over this operation, for it has been practically abandoned by the imitators of Wreden, if not by the distinguished author himself.

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[1] Monatsschrift für Ohrenheilkunde, Bd. I.

1867.—Voltolini,[1] following the suggestion of Erhard, used galvanic caustic by which to maintain the opening. He made an incision through the centre of the posterior section of the membrane. There was a crackling sound, as if one passed a knife through a tense paper. This first operation was on a patient who had been deaf for three years, and had suffered from fever, after which he became blind from cataract and deaf from unknown causes, or at least unstated ones. Immediately after the deafness appeared, which is stated to have been complete, he was treated by the Eustachian catheter, but without effect.

Gruber's operation, which he calls "myringodectomy," consists in forming a flap in the membrana tympani by means of a knife and forceps. The flap is cut off. Voltolini shows that this operation is both difficult and dangerous. It is difficult, on account of the surgeon being obliged to work with two instruments in a narrow canal. That it is dangerous, is shown by the histories of the cases which Gruber gives; e. g., one patient had fever from the 9th to the 21st of November; and quite severe hæmorrhage during and after the operation, so that the auditory canal was several times filled with blood.

1868.—F. E. Weber, of Berlin[2] recommends the division of the tensor-tympani muscle and the "abnormal adhesions that may occur in the region of this muscle." One of the chief indications is the relief of pressure upon the labyrinth from retraction of the tensor tympani. This muscle has its origin from the cartilaginous portion of the Eustachian tube, and runs along the edge of the bony canal, and is inserted by a well-defined tendon on the inner angle and inner surface of the handle of the malleus.

Weber has thus advanced far beyond the idea of maintaining a permanent opening in the membrane, and gives us the new idea of dividing abnormal adhesions that may form in between the ossicula.

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[1] Monatsschrift für Ohrenheilkunde, Bd. I., p. 39.

[2] *Loc. cit.*, Bd. II., p. 51.

Dr. Weber[1] at a later date gives the results of his operation in nine rather ponderous formulas, but they may be summed up in the statement that it is claimed that the operation, in most cases, diminishes tinnitus aurium, vertigo, prevents many persons from becoming absolutely deaf, and that, if a permanent result is desired, air must afterward be regularly forced into the cavity of the tympanum, by means of a Weber's *koniantron.*

Weber has reported cases[2] which confirm his view of the benefit from the division of tensor tympani. It will be seen, by reading these cases, that Weber follows up the operation by the most decided treatment of middle-ear disease, thus placing this operation where, I believe, all perforations of the membrana tympani should be placed, as one of the means of assisting in the thorough medication of the middle ear by injections of fluid and air. Although there is usually a temporary effect from the letting up of the intra-auricular pressure, it cannot be compared to such an operation as iridectomy for glaucoma, when the use of the knife ends the treatment.

Lucae also proposes and performs an operation similar to Weber's. The incision is made in the same portion of the membrane, but he does not claim to divide the tensor-tympani muscle, but simply the folds of the membrana tympani, and the adhesions that may exist there.

Politzer also performs the same operation, under the name of the incision of the posterior fold of the membrana tympani, in order to render the membrane more movable. The incision is a longitudinal one, at right angles to the long axis of the fold, between the short process of the malleus and the peripheric end of the fold.[3]

1870.—Voltolini advised the use of a probe, which is introduced daily in the opening made by the galvanic caustic, for some weeks after. I am not able to say whether Voltolini has found this method a certain means of maintaining an opening, but I am inclined to think not, from the fact that so little is heard from him on the subject.

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[1] Monatsschrift für Ohrenheilkunde, V. Jahrgang, p. 19.

[2] Monatsschrift für Ohrenheilkunde, 1870, p. 123.

[3] Translation of Politzer's lecture by Dr. Burnett, *Philadelphia Medical Times*, vol. ii., No. 36.

Dr. Prout, of Brooklyn, divides adhesions between the membrana tympani and the promontory with a very small iridectomy-knife, having a long handle. His principle of operation is, to divide the adhesions according to their situation. I have seen him perform the operation in two cases. . . .

Mr. James Hinton, of London, aural surgeon to Guy's Hospital, believes that rigid masses of mucus which have collected in the cavity of the tympanum are very often the cause of impairment of hearing and tinnitus aurium. He has accordingly modified Schwartze's operation, and is now practising it quite largely in chronic non-suppurative inflammation. Mr. Hinton is a careful observer, and every suggestion of his should receive the careful consideration of the profession.

Mr. Hinton's operation consists of an incision in the membrana tympani, through which fluid is injected into the cavity of the tympanum and Eustachian tube. The incision is made with a lance-shaped knife, in the inferior and posterior quadrant of the drum-head, and is from two to three or even more lines in length. The syringing is done with some force, in order to drive out of the cavity, into the Eustachian tube and pharynx, dried or inspissated mucus, the collection of which, in many cases, according to both pathological and clinical experience, is the cause of the impairment of hearing and the tinnitus. I have seen Mr. Hinton perform this operation, and two cases upon which it had been performed some time before. In both these cases the patients were confident that there was an improvement in the hearing, and a lessening of the disturbing symptoms for some months after the operation.

The process of washing out the cavity of the tympanum, upon which Mr. Hinton lays great stress, is done by means of a syringe fitting hermetically into the external meatus. A solution of bicarbonate of soda is used. The syringing, which I did on one occasion at Mr. Hinton's clinique at Guy's Hospital, London, immediately after Mr. Hinton had performed the operation, sometimes causes vertigo, which passes away in a few moments.

My own experience in perforations of the membrana tympani has been chiefly in the manner of Schwartze and Hinton; that is to say, I have made simple paracenteses or openings into the membrane, and followed them up by treatment of the diseased membrane of the middle ear. Paracentesis seems to me a perfectly safe operation; it is comparatively painless, and is certainly an adjuvant in the treatment of chronic non-suppurative inflammation. My results are not as brilliant as Prof. Schwartze's, perhaps because I have been in the habit of treating many of the cases, that he treats by paracentesis, by simpler means.

When I first saw Schwartze's paper, describing one hundred cases, I was at first disposed to think that his results were indeed brilliant, but the preceding analysis of them shows that very few of them belong to the category of chronic proliferous inflammation. I must think that the author's zeal for paracentesis has led him to adopt the operation for cases that are curable by other means.

From the experience which I have had, and from a careful consideration of the recorded experience of others, I think we may conclude—

I. That paracentesis, or incision of the drum-membrane in chronic non-suppurative inflammation, is by no means a dangerous or painful procedure.

II. That its chief value is in furnishing a means of treating the lining of the middle ear.

III. That it may properly be performed in cases of chronic proliferous inflammation, that are still advancing in spite of local treatment through the Eustachian tube.

IV. Division of the tendon of the tensor tympani, and division of the adhesions existing between the membrana tympani and the walls of the cavity of the tympanum, are operations that deserve a trial, in cases of chronic inflammation of the middle ear, with symptoms of increased auricular pressure, not relieved by a fair use of the ordinary means.

In the choice of an instrument for a simple paracentesis, it seems to me too much has been said. For Weber's operation, of course, his instrument must be used, and for Prout's operation peculiar instruments are required, which will vary according to the situation of the adhesions, their size, and so on; but for the ordinary paracentesis, whether we require a long or short incision, a puncture or a flap, an ordinary cataract-needle will do very well. Those who prefer an angular instrument will find Blake's knife (which should be lengthened in the shank, however,) one of the best. The use of an anæsthetic is not at all necessary, except where adhesions are to be divided, and the dissection is to be therefore prolonged. Some of the German authors find the membrane very sensitive, even under chloroform, but I have always found it so easy to make a perforation with very little pain—pain so trifling that it is forgotten in a moment—that I am at a loss to conceive any other reason why the membrane should be so sensitive in their cases, than the fact, well known to American surgeons, that Continental practitioners are so timid in using an anæsthetic as very often not to have their patients in a condition that we would consider one of anæsthesia. The patient's head should have a good rest, and a forehead-band be used for the mirror, so that both hands may be free. For ordinary perforations for the purpose of washing out the cavity, the posterior and inferior quadrant is, perhaps, the best position for the incision.

Results of Treatment.—I began this chapter with the statement that the greater part of the reproach that had been cast upon the therapeutics of aural disease was only properly to be placed upon the affections of the middle ear. Excluding the diseases of the labyrinth, which are happily much more rare than those of any other part of the ear, it is just this class of cases, that have now been considered, non-suppurative inflammation of the middle ear, that are most intractable. But when all this is said, before the unpleasant statistics of results are presented, a few words of explanation should be made. These affections are preëminently local in their character; that is to say, a person with this variety of aural disease may have the best general treatment the world affords, and be under the most appropriate hygienic conditions; he may live in a climate like that of Nice, Mentone, Naples, or St. Augustine, and then he will not recover from his aural disease, nay, more, he will continue to grow slowly but gradually worse if his pharynx, Eustachian tubes, and middle ear, are not treated by the appropriate appliances and remedies.

Until ten years ago there was scarcely a medical college in the land, except the University of New York, where Prof. Post taught otology in his course of surgery, where diseases of the ear were even lectured upon with any fulness and correctness. And, now, attendance upon the otological course of our colleges is entirely a voluntary matter with the student. The result is, that the large mass of general practitioners know nothing of the rational treatment of aural disease, and a person who cannot afford to stay in a large city or town where there is a surgeon who practises otology must go without treatment. Thus, very many promising cases, from which good results might be obtained, are never treated. They are, perhaps, diagnosticated, but, inasmuch as the victims of them are surrounded by, and cannot get away from, those who "never meddle with the ear," they go down to their fate. With these preliminary statements, I give the subjoined table:

Table showing the Results of the Treatment of Chronic Non-suppurative Inflammation of the Middle Ear.

Reporter.	No. of Cases.	Cured.	Improved.	Unimproved.	Unknown
Spencer[1] (St. Louis).....	56	6, 16⅔ per ct. of those actually treated.	18, 50 pr ct.	10, 27 pr ct.	20
Schwartze (Halle)[2]......	230	30, 20 pr ct.	94, 60 pr ct.	30, 20 pr ct.	75
Gruber (Vienna)[3]........	187	38, 32 pr ct.	61, 60 pr ct.	9, 9 pr ct.	84
Roosa (New York).......	514	23, 11 pr ct.	160, 62 pr ct.	171, 48 pr ct.	159

ART. III.—*Strychnia in Amaurosis.* By JULIAN J. CHISOLM, M.D., Clinical Professor of Ophthalmic and Aural Surgery in the University of Maryland, and Surgeon in Charge of the Baltimore Eye and Ear Institute.

M. J. H., of Kentucky, aged forty, has been under medical treatment for four years, for progressive optic-nerve atrophy, both eyes being equally defective. He had been in the habit of using tobacco and whiskey freely, and, from the great nervous irritability exhibited after an over-indulgence in tobacco, his physician had very properly considered this the cause of his defective vision. He was advised by him to abstain from the use of both tobacco and whiskey, which he acquiesced in. Medical treatment was then instituted, and modified from time to time, but with no good results, vision remaining very cloudy. At the end of the four years of treatment and abstinence he had lost, rather than gained, ground. At this time he applied for treatment at the Baltimore Eye and Ear Institute. I found his strength of vision, with either eye, No. 16 of Jaeger's test-type at one foot. This type corresponds in size with the heavy type on the title-pages of books. An ophthalmoscopic examination of the vitreous chamber gave clear media, an apparently healthy retina, with retinal vessels of good size, but the optic nerve-disks were white.

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[1] Reprint from *St. Louis Medical Journal.*

[2] Archiv für Ohrenheilkunde, Bd. I. to Bd. VI., *passim.*

[3] Monatsschrift für Ohrenheilkunde.

As this was one of a class of diseases, for the correction of which experience had taught me the value of strychnia, I determined to bring this patient under its stimulating influence without delay, notwithstanding his statement that he had already tried the remedy, and had found no benefit from its use. For safety, I commenced with the dose that is usually prescribed by physicians, viz., one-thirtieth of a grain of the sulphate of strychnia; but, unlike the majority of the profession, who seldom exceed this amount, and therefore get no good results from its administration, I only used the one-thirtieth of a grain, as a minimum dose, to guard against idiosyncrasies. As this quantity was well borne, it was increased by small additions from day to day, until I reached the largest amount which the system would tolerate. In referring to my note-book, I find the increase in this particular case as follows, $\frac{1}{30}$ gr., $\frac{1}{24}$ gr., $\frac{1}{20}$ gr., $\frac{1}{15}$ gr., $\frac{1}{10}$ gr., $\frac{1}{8}$ gr., $\frac{1}{7}$ gr., $\frac{1}{6}$ gr., and $\frac{1}{5}$ gr., the interval of time required by the system to tolerate the largest dose, from the commencement, of the treatment, covering a space of two weeks. These doses were given three times a day until one-tenth of a grain was reached. With the larger dose the night-dose was badly borne, causing too much excitement of the nerve-centres, accompanied with very uncomfortable stiffening of the leg and spine muscles. It was found that the large doses could be taken with no discomfort in the morning, but not in the evening, on account of the slow elimination of the drug, so that by active absorption the night-dose was added to that portion of the morning-doses still in the circulation. This night-dose was, on this account, always made the smaller dose, viz.: when one-fifth of a grain could be taken after breakfast and dinner without much discomfort, one-tenth of a grain was all that the system would tolerate after supper. Under this course of treatment, keeping the patient constantly excited by increasing doses of strychnia, a marked improvement in vision showed itself even within the two weeks. The patient then returned to his distant home, with instructions to keep up the remedy in full doses. An appreciable stimulation was daily experienced from one-half of a grain of strychnia a day, when continued for even five weeks, and the improvement in vision, although slow, was steady. By this time the system had so fully tolerated the remedy that the usual stimulation evidenced by the toning up of the muscles was no longer experienced by the one-half of a grain, and the improvement in vision seemed to be arrested. For three weeks the one-half of a grain was continued daily, but no progress detected. The dose was now increased to seventeen-thirtieths of a grain per day, when the stimulating effects were again renewed, and within twenty-four hours there was an appreciable improvement in the sight. This patient has, at this time, been taking these large doses of strychnia for eleven weeks. In general health he is stronger and more vigorous than for many years. Now his sight has so much improved that he is beginning to read ordinary print, and will soon be ready to resume active business. This case, one taken from a very large number of cases, is reported in order to show why it is that strychnia, the chief of nerve-stimuli, so often fails to sustain its well-deserved reputation, because administered in doses too small to be of any service. When given judiciously, in doses as large as the system will tolerate, constantly increasing the dose with the tolerance, so as to induce continually an appreciative excitement, good results may always be expected from strychnia in cases of deficiency of nerve-power. The size of the dose must be regulated by the stimulating effect and must be increased as this stimulation diminishes under the remedy. So far I have had no occasion to exceed one-fourth of a grain of the sulphate of strychnia at a dose, although a case may yet show itself in which this large quantity may fail to produce the necessary nerve-stimulation, under which circumstances I would not hesitate to increase the amount at each dose. After many careful experiments, I have found no appreciable difference between the hypodermic and mouth administration, and now give the medicine in the form of sugar-coated granules, to conceal the bitter taste.

Clinical Records from Private and Hospital Practice.

I.—*Case of Naegele Pelvis.* By W. T. Lusk, M. D. Induction of Premature Labor; Version; Recovery.—Bellevue Hospital: Visiting Physician, Dr. Lusk; House Physician, Dr. Carrigan.

In the latter part of November my attention was drawn to a supposed rachitic patient, who was awaiting confinement in the ward of the hospital assigned to pregnant women. The patient, who gave her name as Maggie Murray, and age as twenty-three, was four feet high, with kyphosis and scoliosis, and a large head, suggesting by its shape the existence of rickets in early childhood. The idea was still further confirmed by a pendulous abdomen, the fundus of the the uterus sinking, in the erect posture, below the upper edge of the symphysis pubis.

Examination, however, showed the conjugate to be of normal length, and the promontory situated considerably to the left of the median line. The transverse diameter of the outlet (between the ischia) was so far diminished as greatly to increase the difficulties of internal exploration. Careful external measurements established that we had here a case of that somewhat rare deformity known as the naegele, or oblique pelvis. By way of confirming my own measurements, made in conjunction with Drs. Swan and Griffith of the house-staff, I asked Dr. Sayre, whose practical experience in measurements from the various prominent points of the pelvis has been, as all know, very great, to repeat, with the circle of Baudelocque, the measurements between certain designated points; which, with the distances, are herewith given. I should mention, perhaps, that the measurements were made by Dr. Sayre, one after another, as asked for, without his having had suggested to him any special theory regarding the probable character of the pelvis. The results are sufficiently striking:

Circumference of pelvis over the trochanters	29	inches.
Between trochanters	10½	“
External conjugate	6½	“
Between ant. sup. spin. proc.	9	“
Between post. sup. spin. proc.	2½	“
1. From rt. sup. spin. proc. to proc. spin. of last lum. vertebra.	1¾	“
From lt. sup. spin. proc. to proc. spin. of last lum. vertebra	¾	“
From rt. ant. sup. spin. proc. to rt. post. sup. sp. proc.	6	“
“ lt. “ “ “ “ lt. “ “ “	5½	“
From rt. tub. ischii to rt. post. sup. spin. proc.	5½	“
“ lt. “ “ lt. “ “ “ “	4⅝	“
2. From lower border of symphysis pubis and rt. pos. sup. spi. proc.	6½	“
From lower border of symphy's pub. to rt. pos. sup. spi. proc.	4½	“
3. Distances between tuberosities of ischia	2¼	“

Of these measurements only those marked respectively 1, 2, and 3, are offered as conclusive. The others simply show a pelvis somewhat unsymmetrical, and below the average size.

Internal examination showed a conjugate diagnalis of five inches, an extreme approximation of the ischia, the promontory directed to the left, and almost complete absence of the left pelvic space. A sharp angle was formed at the symphysis by the union of the horizontal rami of the pubic bones.

The posterior curvature of the spine extended from the first dorsal to the first lumbar vertebra. Left lateral curvature existed from the first lumbar vertebra to the sacrum.

The circumfrence of the right leg below the flexure of the thigh was fifteen inches, while that of the left leg measured but twelve inches. No traces of preëxisting coxitis.

The patient gave the following history: When eighteen months old, her father placed her upon the top shelf of a clothes-press, from which she fell, breaking her back, and injuring her left hip. She was, in consequence, unable to walk before her eighth year.

Since her recovery she has enjoyed good health, except so far as she suffers from shortness of breath. At fifteen she menstruated, and at twenty became pregnant for the first time. At the King's County Hospital she gave birth at full term to a dead child. The records of the hospital show that the unaided uterine forces sufficed to accomplish delivery. The child is reported to have weighed six pounds and eight ounces, and the bones of the skull are noted as having been greatly dislocated.

There was here little reason to doubt that in consequence of the fall upon the left hip an inflammatory process had been set up in the sacro-iliac synchondrosis, which had resulted in bony union, and arrest in the development of the sacrum and ilium upon the affected side. The history of her previous confinement encouraged hopes that by the induction of premature labor it might be possible to save the life of the child.

Upon consultation with my colleague at the hospital, Dr. Barker, it was decided not to defer the induction of premature labor beyond the thirtieth week. The patient gave as the date of last menstruation the 27th of May. The two hundred and tenth day would have been accomplished (reckoning by the menstrual period) upon December 22d.

On Wednesday, the 18th inst., initiatory measures were entered upon. Beginning at 5 o'clock A. M., the vaginal douche was used for fifteen minutes, and continued, at two hours' intervals, up to midnight. The next morning the douche was again employed, and continued at the same intervals until 3 o'clock P. M. At this time it was discontinued partly because the result had been absolutely *nil*, and partly because of the bad repute enjoyed by the Kiwisch method at the present day. It was resorted to in the first instance simply because the excessive elevation of the cervix uteri and the narrowness of the pelvic aperture seemed to render other methods impossible. On Thursday afternoon, however, an attempt was made, with the assistance of Dr. John G. Perry, of this city, to introduce a sponge-tent. The patient was placed upon her left side in the position recommended by Dr.

Sims for the use of his speculum. Dr. Perry and myself took turns in attempting the introduction of the sponge-tent. For a long time our efforts were without avail, as the soft cervix, which could be barely reached by the finger, slipped away as soon as pressed by the tent. Dr. Perry finally succeeded by bending a Simpson's sound into the form of a hook, and dragging down with it the cervix uteri. The tent was left in overnight. The next morning, at 10 o'clock, I replaced it by one of still larger size. On Friday night I introduced the smallest size of the Barnes dilator, and left in place till morning. At 7 o'clock A. M., on Saturday, labor was found to be progressing. At 9 o'clock A. M., more rapid expansion of the os was determined by the larger-sized dilator, so that in the course of an hour I was able to proceed to the completion of labor. Having succeeded in getting my hand into the vagina, with four fingers in the cervix, and pressing at the same time upon the breech from without, I managed to get hold of a foot and perform version. The delivery of the trunk and arms was easy. The head descended into the pelvis without encountering any resistance until it reached the space between the ischia. Here it was detained for four or five minutes in spite of every effort to pull it by the obstacle. It was only by adopting the so-called "Prague method" for head-delivery that this was finally accomplished. The Prague method consists in forking the thumb and fingers of the left hand over the shoulders of the child, and then, while using the left hand as a fulcrum, drawing the feet of the child rapidly upward. This method may not be devoid of danger to the child, but it certainly is very effective.

The child weighed three pounds and ten ounces. It breathed feebly for about an hour, and then died. A deep groove was formed upon the left side of the head, near the coronal suture, by the pressure of the left ischium. The transverse diameter of the head, measuring from the groove to the corresponding point upon the opposite side, was a small fraction less than two inches, which may be taken as the exact measurement of the transverse diameter of the pelvic outlet. In view of the fact that the head of a child, weighing over six pounds, had in a previous confinement been forced through this diameter by the uterine action alone, this evidence of extreme contraction caused a good deal of astonishment. There was slight febrile disturbance during the first forty-eight hours following delivery, but otherwise all went well, so that on the ninth day the patient was allowed to get up from bed, and go around as usual.

II.—*Report of a Case of Aneurism by Anastomosis in the Left Parietal Bone. Recovery.* By William A. Byrd, M. D., Ursa, Illinois.

On December 21, 1871, I was requested by Mr. John Mercer to call and see a child of his, only five days old, who was suffering from a tumor, as he represented, upon his head.

Calling at his house, I found the child suffering from what, at first sight, I took for a large caput succedaneum. The tumor completely covered the left side and back part of the head, fluctuating upon percussion, and having a purple color. The mother stated that, shortly after birth, a small, hard tumor was noticed a little above the centre of the left side of the head, and that it shortly began to grow around the original site, the added part being soft, the original feeling still hard, and retaining a position nearly in the middle of the swelling. The swelling grew all the time until it was as I saw it.

The tumor was undoubtedly caused by extravasation of blood. The scalp was so puffed up by this extravasation that I could scarcely feel the congenital tumor that I had been told of, but, to be fully assured, I inserted the needle of a hypodermic syringe into the swelling and drew out a drachm of blood, stating to the family that I believed that the tumor that was present at the time of the birth of the child was of an aneurismal character, and that some of its vessels had become ruptured, permitting the extravasation of blood under the skin, and that, unless some means were found for occluding the mouths of the bleeding vessels, the child would surely bleed to death. I also told them I had grave fears of my ability to control the hæmorrhage should I operate, but that I saw no other chance for the child's life. The father requested that, if there were but one chance in a thousand to save the life of his child, I should give it chance before I left the house, and that, if the result should be fatal, I should be held blameless.

I proceeded to the relief of the child by diluting one part liq. fer. persulph. with two parts water, a drachm of which mixture I threw under the scalp, over the situation of the congenital tumor, with a hypodermic syringe. This coagulated the blood immediately. I then made an incision an inch and a half long over the tumor, and turned out all of the clotted blood that I was able to. This exposed the congenital tumor, and disclosed that it was adherent to and continuous with the parietal bone, presenting a honey-combed appearance, the walls being bony and cartilaginous, the blood pouring out of the openings at every pulsation of the heart. The flow never ceased, but with each systole it was much greater.

To check the hæmorrhage I applied compressors, soaked in a solution of persulphate of iron, to the tumor; this I had to continue for at least an hour before I stopped the flow of blood. Before the hæmorrhage ceased, I began to feel that I should certainly be so unfortunate as to witness the child bleed to death without being in the least able to prevent it. The tumor, consisting of bone, and cartilage undergoing bony metamorphosis, presented no chance to apply a ligature.

Leaving some solution of persulphate of iron, with instructions to apply compressors soaked in it to the wound, providing the bleeding should be renewed, and fastening a compress, well soaked in the same solution, over the wound with a handkerchief-bandage, I left, promising to return the next day. Not having read any authorities for some time upon that class of diseases, when I got home I commenced looking them up, to see how well they would agree with the statement I made the family in regard to the doubtfulness of the child recovering. Prof. Gross's "System of Surgery," third edition, vol. i., page 838, says: "There is a form of this affection in which the vessels, as was first clearly shown by Mr. Stanley, consists principally of enlarged capillaries, exhibiting the same general characters as an anastamotic aneurism, or an erectile tumor of the soft parts. The disease has hitherto been chiefly noticed in the broad bones, especially those of the cranium of young children." Farther on, he says: "The only effectual remedy for this disease, provided its location is favorable, is amputation." The location in my case was decidedly *un*favorable for any such measure. On page 839, he states: "The anastomotic form of this disease admits of removal only when it is of limited extent. When it is situated in the cranial bones, it gradually destroys the osseous tissue, and ultimately involves the brain and its envelops, rendering interference out of the question. Several cases have been reported in which the carotid arteries were tied for this disease, but in none with any permanent benefit."

The reading of Prof. Gross's opinions destroyed all the hope I had formed of saving the life of the child. It was with this feeling of despair that I made my visit the next day. Upon arriving at the house, and taking off the dressing from the child's head, I found the edges of the cut joined pretty firmly by intervening coagulated blood, but underneath this the blood had extravasated, forming a tumor about the size and shape of the bowl of a dessert-spoon. An impulse could both be seen and felt in this at every contraction of the heart. Being so little assured from what I learned of the experience of others in this disease, I refrained from any further interference, ordering them to keep a compress over the tumor saturated with a solution of persulphate of iron, and, if open hæmorrhage should occur, to let me know immediately.

I thus left the case, expecting fully that the coagulum closing the wound would either give way before the pressure of the blood, or would be separated by ulceration, when either of which should occur the fatal termination would be consummated. In fact, I stated as much to the family.

The family waited and watched for three days, hourly expecting the child to bleed to death, but the extravasated blood became coagulated, and the child began to recover from the weakness consequent upon the loss of so much blood, contrary to my prediction. This being the state of affairs, they, without my knowledge, sent for Dr. Richard Williams, of Marcelline, who, when he came, told them that, from the hardness of the scalp, produced by the coagulated blood both under and upon the skin, it was impossible for him to say what condition the child's head was in at the time I was summoned, but that I had evidently done all for the case that any one could have done. After ordering them to apply a poultice of soft-soap to the scalp to soften the coagulum—which it did not do—he dismissed the case.

Suppuration set in under the scalp, and continued about five weeks, lumps of coagulated blood passing through the incision I had made, until the whole coagulum under the scalp was broken up and passed out. The wound then healed over, having no prominence under it, and no pulsation.

The family moved out of the neighborhood in March, but I heard from the child some time afterward, when he was still in excellent health, with no signs of a return of the tumor.

I once heard a distinguished professor, in one of his lectures to his class, remark: "Be certain, young gentlemen, never to give up a case until you are sure that your patient is quite dead." The remark struck me forcibly at the time, and this case will serve to stamp it still more indelibly on my mind.

Dr. Markoe, in his work on "Diseases of the Bones," after describing different forms of pulsating tumors of the bones, speaks of having tied the carotid arteries for pain caused by tumors of the above class in the bones of the head; but, though the pain ceased, all of his patients died in a short time after the operation. In a case of Dr. Neill's, of Philadelphia, reported by Dr. Markoe, where both occipitals were tied for the cure of a pulsating tumor in the occipital bone, the operation checked for some time the growth of the tumor, but the patient died in four or five months. He also reports a case occurring in the practice of Dr. E. D. Mapother, where the actual cautery was applied. Two applications were necessary, but at the end of two months the patient had recovered.

Dr. Markoe closes his remarks, in regard to aneurismal tumors of the bone (*see* page 299), thus: "Of course, if the tumor be favorably situated, there may be cases in which extirpation can be performed by the gouge and saw. Here the result will depend on the nature of the tumor; but, as far as I know, the mere fact of the vascular character of the tumor need not discourage the resort to the usual operations in similar non-pulsating growths. In the limbs, amputation has been, in by far the greater number of cases, the only method of ridding the patient of this alarming and very commonly fatal disease."

III.—*A Purulent Mastoid Periostitis developed from an Otitis Media, in which a Communication existed between the Mastoid Abscess and the External Meatus; Slight Damage to the Membrana Tympani and Tympanic Cavity; Relief by Incision of the Mastoid.*

George Scrypes, aged thirty-six, applied to me on January 20, 1872, for a large-sized swelling behind left ear, accompanied by persistent pain, which had continued most of the time for *four* months. He at first complained of deafness and tinnitus, lasting for a month; at that time there was no discharge. After this he recovered his hearing, but the tinnitus remained. Soon after, he experienced a numb pain in the left side of the head, which continued for another month, although he worked all this time at his trade (brick-laying). This symptom was relieved by a poultice. Ten days from the present date he had a discharge for the first time. Three weeks since, a reddish swelling appeared behind the ear, which was diagnosticated by his physician as erysipelas, and was painted with tincture of iodine. Six days since, this swelling was opened by the doctor, evacuating only blood; incision closed next morning. A short time after, however, the doctor evacuated the abscess by pressure, the matter passing through into the external auditory canal, which afforded very little relief. On January 20th, I made an extensive and deep incision along the course of the mastoid, evacuating about four ounces of pus, which had burrowed beneath the scalp, above and behind the auricle, to the extent of three inches, and which at once relieved all the unpleasant symptoms. About the temple there was a considerable swelling, so as to nearly close the eye, but it disappeared in three or four days. For three weeks previous had had constant pain, although not very severe, but it had been serious enough to undermine his health, so that he is considerably emaciated. For the next eight days the pus showed a tendency to re-collect, and enlargement of wound by incision was necessary to maintain a free opening. The tissues were so boggy that it was very difficult to evacuate the pus, even through a fair opening; hence, the necessity of probes. I felt opposed to the use of a tent, on account of keeping the abscess closed, and pus accumulating between the times of removal of the tent, rather preferring to keep the wound constantly open, so the patient could evacuate the matter himself by pressure. I think I have frequently had this experience. On February 1st, discharge from the incision had ceased. The ear has not discharged for two weeks. The membrana tympani is thickened, the light point and manubrium are invisible; canal somewhat reddened, more so posteriorly. It may be possible that the discharge came mostly, if not wholly, from the mastoid abscess, and that the membrana was never ruptured, although proof of this is not possible to obtain. The hearing-distance was $\frac{1}{10}''$. That of the right was $\frac{1}{3}'$, not improved in either case by inflation. Has had no tinnitus for the last two months. On February 6th, hearing-distance, right, was $\frac{24}{10}''$ ($=\frac{1}{5}'$) diminished by inflation. Hearing-distance, left, $\frac{8}{10}''$ $=(\frac{1}{15})$, after inflation less. The hearing-distance of left varies, and is worse when deglutition is frequently performed, or when he inflates (both methods seem in his case to inflate). On February 10th the hearing-distance of left was $\frac{1}{9}$, diminished by inflation.

The peculiarity of this case consists in the mode of invasion of the mastoid affection.

Usually it is easy enough to trace the inflammation directly from the tympanic cavity to the mastoid-cell region. In this case it is quite probable that the disease passed from the cavity to the mastoid, and is equally probable that the niches of the mastoid inflammation existed in the posterior part of the external canal, near the membrana tympani. The absence of any considerable throat-complication would assist in this solution of the question. The inflammation probably commenced in the external canal. The moderate diminution of the hearing-distance would help to confirm this opinion.

Bibliographical and Literary Notes.

Art. I.—*A System of Surgery, Pathological, Diagnostic, Therapeutic, and Operative.* By Samuel D. Gross, M. D., LL. D., D. C. L. Oxon; Professor of Surgery in the Jefferson Medical College of Philadelphia, etc. Illustrated by upward of Fourteen Hundred Engravings. Fifth edition, greatly enlarged and thoroughly revised. In two volumes. 4to, pp. 2,368. Philadelphia: Henry C. Lea. 1872.

No American surgeon is better known or more highly honored at home or abroad than the author of the voluminous and exhaustive treatise which is now before us. It would seem almost presumptuous to enter upon the task of criticism and review, were it not true that there can be no works of learning, labor, or genius, with which some fault may not be found, some suggestion of improvement made, some omission pointed out, and that by persons far less erudite, capable, and inspired, than their authors.

The author states in his preface that "the work should be regarded as embodying the results of a large personal if not ripe experience, of extensive reading, and of much reflection; in a word, of exhibiting surgery as I myself understand it, and as I have for so many years conscientiously taught it." He alludes with just pride to the evidence of respect and favor with which the profession at large has received his work, and the rapid exhaustion of four large editions, which has created the demand for the present enlarged, improved, and thoroughly-revised edition.

It would obviously be impossible to make any thing like a thorough analysis of a work of the size and scope of the present, without writing one as large, perhaps, or larger. We shall proceed, as far as time and space will permit, and trust that every surgeon will, in addition, read and judge the performance from his own point of view, and from the light of his particular studies and experience.

Chapter I., vol. i., discusses "Irritation, Sympathy, and Idiosyncrasy," in a thorough and scholar-like manner, full of practical observation and excellent illustration. It appropriately opens the way to congestion and inflammation.

We do not think we can do better than to give Prof. Gross's definition of inflammation, which is as concise, comprehensive, and scientific, as any with which we are acquainted. He says, Chapter III., page 49 : "Inflammation may be defined to be a perverted action of the capillary vessels of the part, attended with discoloration, pain, heat, swelling, and disordered function, with a tendency to effusion, deposits, or new products. In addition to these changes, there is also an altered condition of the blood and nervous fluid as an important element of the morbid process. In what inflammation essentially consists, it is as impossible to determine, as it is to explain the intimate character of attraction, repulsion, gravitation, or cohesion. Hence the medical philosopher, in studying its history, is necessarily obliged to limit himself to an examination of its causes, symptoms, and effects; or, in other words, to a rigid analysis of its appreciable phenomena and consequences."

In conformity with the axiomatic deduction of the above admirable definition, the learned author gives us an elaborate description of inflammation, and a thorough analysis of its appreciable phenomena and results. It is distinguished from other treatises on the same subject by its minuteness of detail and comprehension of all known and important facts, which are sustained, elucidated, and connected by an elegant style, and correct use of language. He appreciates the doctrines of the intimate nature of inflammation, and carefully considers the modern views and theories, especially those of Von Recklinghausen, Stricker, Norris, Redfern, Virchow, Jolly, Parker, Waldeyer, Beale, Leidendorf, Billroth, and others. To Cohnheim he awards the praise, as we think justly, of having "interpreted his own observations correctly, and developed the researches of his predecessors." In this department of his work we see an example of successfully putting new wine into an old bottle. The essay has almost the appearance of having been written by two distinct persons. The old, practical, sagacious, observing, self-reliant surgeon appears on the one hand, and on the other the careful, youthful student of modern histological physiology and pathology. This phenomenon illustrates the truth that the intellect never grows old. The subject is treated in the full light of recent discoveries, investigation, and comparison. The forms of expression are sometimes obsolete, the relics of a medical era which is rapidly passing away. In treatment, Prof. Gross adheres to some of the doctrines of the humoral pathology, and the antiphlogistic school. Few modern surgeons will be prepared to go as far as the author in his advocacy of general bleeding. It is probable, on the other hand, that its almost universal disregard or condemnation is an error in the opposite direction. With this exception, the directions laid down for treatment are wise, philosophical, comprehensive, and discriminating. As a whole, the chapter on inflammation is one of the most excellent that has even been written, not excepting the famous treatise of Mr. Simon.

The chapter on tumors and morbid growths suggests the same remark which we have made under the head of inflammation. We observe a quaint mixture of new ideas with old forms of thought. This fact, however, does not militate against the general scientific accuracy of his definitions and descriptions. We observe the occasional use of the word *neoplasm*. We regard this word as likely to be the mother of misconceptions. There is no such thing as a neoplasm. Every growth or proliferation within the body has its antetype in the body. It may be degraded, deranged, and deformed, but it is not new. It may be dislocated as to its legitimate and natural seat and abode, but that makes it new only in respect to locality.

In Chapter XIV., Prof. Gross decidedly takes his position for the unicity of syphilis. We cannot consider the syphilitic problem settled, but the steady accumulation of facts and observations points to the time when probably the essential distinction between chancre and chancroid can be settled definitively. Syphilization is lightly and cautiously touched upon, and receives but slight encouragement.

Wounds, contusions, modes of dressing and treatment, gunshot, railway, and poisoned wounds, injuries, and the various degrees and qualities of shock, are treated in an able and exhaustive manner from the points of view of sound knowledge, extensive experience, and discriminating observation.

Certain forms of shock produced by railroad collisions resemble that peculiar concussion of the brain and nerves which is occasioned by the bursting of a shell very near the head. A similar cachexia is liable to follow the latter class of accidents, in a more acute degree, however, than in the former. Prostration and collapse are well discussed, and show the combination of the qualities of both physician and surgeon.

General diagnosis is a valuable chapter. Electrolysis is placed under the head of Minor Surgery. The space allowed is necessarily too short for the elucidation of what constitutes almost a separate science. Mallez, Tripier, and Brenner, are quoted as "demonstrating that the most gratifying results may be obtained from it" (electrolysis) "in the treatment of stricture of the urethra."

We are far from admitting the demonstration. We do not acknowledge that the alkaline pole, introduced into the urethra, will not produce ulceration as the result of its action, with ultimate deposit of white fibrous tissue and recontraction. We believe dilatation, or the clean incision of a urethrotome or scalpel, far safer, better, and more surgical. We hold ourselves open to conviction on this as on other disputed points.

We think this point should have been guarded by some words of caution from the author.

Operative surgery, with its preface and appendix of preparation of the patient and subsequent treatment, is handled with the ease, grace, dexterity, and finish, of the practised and thoughtful surgeon.

These chapters combine minuteness of detail with scope and breadth of observation, and can be read, and read over, with profit and advantage.

Diseases and injuries of arteries are discussed at length, and with great ability. This section is profusely illustrated, and is rich in historical and statistical information. We would recommend such of our readers as may wish to study this subject, to read the lectures of Timothy Holmes, which were commenced in the September number of the *Lancet*, in connection with the treatise of Prof. Gross.

Diseases of the eye and ear are treated as well as such subjects could be, in a work devoted to general surgery.

It is, of course, out of the question to follow the learned professor through every department. The present edition is an improvement upon the former.

The progress of surgery is illustrated by the demand for this edition, and the additions and improvements which it contains. It combines, as perfectly as possible, the qualities of a text-book and work of reference. It is, however, much better adapted to the advanced student and practitioner than to one commencing his studies. It would be a good plan to have a copy with blank interleaves, on which the progress of the several departments, and new facts as they are constantly reported, could be noted, with their references. By this means, the student could provide himself with a perfect work of reference.

We think this last edition of Gross's "Surgery" will confirm his title of "*Primus inter Pares.*" It is learned, scholarlike, methodical, precise, and exhaustive. We scarcely think any living man could write so complete and faultless a treatise, or comprehend more solid, instructive matter in the given number of pages. The labor must have been immense, and the work gives evidence of great powers of mind, and the highest order of intellectual discipline and methodical disposition, and arrangement of acquired knowledge and personal experience. The medical press of the country has been particularly fruitful since the war, and we have the promise that it will continue to pour forth the results of original study, investigation, experience, and successful practice, in a still greater degree.

ART. II.—*Transactions of the American Otological Society. Fifth Annual Meeting, Newport, R. I., July* 17, 1872.

THE list of papers read and submitted to the Publishing Committee, was as follows:

1. Report on the Progress of Otology. By C. J. Blake, M. D., of Boston.

2. Accidental Evulsion of the Membrana Tympani and Ossicles. By C. H. Burnett, M. D., of Philadelphia.

3. Clinical Contributions: Otitis Media Hæmorrhagica. By D. B. St. J. Roosa, M. D., of New York.

4. A Case illustrating the Effects of Quinine upon the Ear, and the Etiology of Inspissated Cerumen. By D. B. St. J. Roosa, M. D., of New York.

5. Examination of One Hundred Cases of Impacted Cerumen, with a View of determining its Pathological Indication. By O. D. Pomeroy, M. D., of New York.

6. A Case presenting a Mastoid Sequestrum. By O. D. Pomeroy, M. D., of New York.

7. A Faucial Eustachian Catheter. By O. D. Pomeroy, M. D., of New York.

8. The Perception of High Musical Notes. By C. J. Blake, M. D., of Boston.

9. A Case of Caries of the Meatus. By C. J. Blake, M. D., of Boston.

10. A Middle-Ear Mirror. By C. J. Blake, M. D., of Boston.

The Report on the Progress of Otology, by Dr. Blake, is an exceedingly interesting and painstaking piece of work. Vierordt's "Physiology of the Ear" is shown to contain a mass of valuable information on various subjects, though not nearly so full as Helmholtz's more extended work, and hence, of more value to the general student than to the specialist. A short notice is given of the works of Miot and Turnbull, which present nothing new of any great value. The most valuable works are those upon the microscopic anatomy and pathology, and particular mention is made of the papers of Gottstein, Nuel, and Hasse, on the cochlea, the former of whom reviews the various opinions of Hensen, Deiters, Henle, and Boettcher. Embryological examinations prove, without doubt, that the crista may be considered as a periosteal formation. Mention is made of F. E. Weber's contributions to our knowledge of the anatomy of the Eustachian tube, which follow on in the same path already broken by Rüdinger. Dr. Blake proves that almost all our knowledge of the minute anatomy is drawn from the investigations of our German *con-*

frères, and he calls particular attention to the labors of Hasse upon the development of the ear in fishes. Dr. Burnett's investigations on the mechanism of the ossicula, and of the membrane of the round window, are carefully reviewed, and the experiments of Mach and Kessel upon the movements of the membrana tympani, ossicula, and intra-labyrinthine fluids, by means of the stroboscopic method, are mentioned in connection with Burnett's investigations. An account is given of Urbandschitsch's investigations with the tuning-fork, but no satisfactory explanation of the phenomena observed is given. Politzer's and Gruber's views on division of the posterior fold of the membrana tympani, and of the tendon of the tensor-tympani muscle, are compared, and considered as valuable contributions to our knowledge of pathological changes. A full account is given of F. E. Weber's method of dividing the tendon of the tensor-tympani muscles, and the indications for the operation. Weber's cases of otitis intermittens, and their cure by quinine, are mentioned as types of a new affection. The whole report is a very careful and praiseworthy production.

Dr. Burnett reports a case of traumatic evulsion of the membrana tympani and the ossicula, in which the accident caused sudden and great loss of hearing, and attributes the latter to the absence of the ossicles.

Dr. Roosa reports two cases of otitis media hæmorrhagica, in which he thinks the hæmorrhage is due not merely to an exudation through the walls of the vessels, but also to an actual breaking down of these walls, owing to the rapidity and intensity of the inflammation. Dr. Roosa also reports a case illustrating the effects of quinine upon the ear, and regards the drug as the exciting cause of the aural inflammation, believing that the latter was the cause of the impaction of wax.

Dr. Pomeroy publishes one hundred cases of impacted cerumen, and from them draws the conclusion that the presence of the cerumen in the external meatus, in considerable quantities, is sufficient to excite inflammation, and that sometimes the cerumen invites an attack of acute inflammation while the patient is suffering from a catarrhal pharyngitis. Dr. Pomeroy also reports a very interesting case of suppurative inflammation of the middle ear, in which the whole of the temporal bone exfoliated, except the lower part of the external auditory meatus and the inner portion of the petrous bone. The patient was a child of strumous diathesis, and recovered, with slight facial paralysis of the same side. A very neat photograph accompanies the paper.

Dr. Pomeroy also describes a faucial Eustachian catheter, by which the Eustachian tube may be catheterized through the mouth instead of through the nose.

Dr. Blake gives a very interesting summary of the result of experiments on the perception of high musical tones, by which he shows that the difference in the perceptive power of the ear is largely due to variations in the sound-conducting and not in the perceptive portion of the auditory apparatus. The paper is a valuable piece of scientific work.

Dr. Blake also reports a case of caries of the meatus following purulent inflammation of the middle ear, in which the opening made over the mastoid had closed within forty-eight hours after the removal of the sequestra, and two weeks later the patient was discharged cured.

Dr. Blake also presents a drawing of a middle-ear mirror, for examining the interior of the middle ear in cases of suppurative otitis, where the opening in the drum-membrane is large enough to admit of its introduction. The instrument consists of a Weber's tenotome, the cutting-hook being replaced by a polished steel mirror of from one-sixteenth of an inch to one-eighth of an inch in diameter. The mirror is made by flattening out the end of the shaft, bending it at the proper angle, tempering and polishing it. The shaft is ductile, so that the angle of the mirror may be varied to suit any case. The only difficulty in its application is in obtaining a sufficiently strong illumination.

Dr. Morland made a verbal communication in regard to corpulence as a cause of deafness. He referred to a work by William Harvey on "Corpulence in Relation to Disease," and quoted from it. The opinion was new to him, and he thought the subject was of interest. Dr. Blake, in commenting upon Mr. Harvey's statements, says that the author's theory is based upon the physiological relations of the Eustachian tube to the middle ear, and he thinks that too much importance is attributed to the condition of the tonsils in causing deafness, as their anatomical relations to the Eustachian tubes are such as to render an occlusion of the latter impossible. This view Dr. Blake does not coincide with.

The "Transactions" conclude with a report by Dr. J. Orne Green on some cases of injury to the ear from external violence. An interesting fact in connection with the cases is, that in five out of the ten cases the ears were undoubtedly diseased before the accidents.

The whole number is one of unusual interest.

Art. III.—*The Microscope and Microscopical Technology. A Text-book for Physicians and Students.* By Dr. Heinrich Frey, Professor of Medicine in Zurich, Switzerland. Translated from the German, and edited, by Geo. R. Cutler, M. D., etc. From the fourth German edition. 8vo, pp. 658. New York: William Wood & Co., 1873.

Perhaps no one specialty has proved more effective for the advancement of the science of medicine than has microscopy. The improvement in instruments, and investigations during the last decade, have added dignity to this study, so that no one can claim to possess the best means of diagnosis without a microscope and a knowledge of its science, unless he have opportunities for associating with some one possessing these requisites. To add even more dignity to the study, a more systematic course of teaching it is to be recommended in our colleges.

The work before us, treating of this branch of medicine, is presented very modestly, reference being occasionally made to it as a "little work," yet we find it not only very accurate in all its details of processes, but complete as regards variety of topics treated; although it is not intended for an exhaustive treatise upon technology, the condensed style of the author, the fairness of his nature, together with his understanding of histology, permit an unbiassed discussion of nearly all questions of microscopic anatomy, and many of obscure pathology.

The sections devoted to the *theory of the microscope*, its *use*, *preparation of objects*, etc., are succinctly, fully, and accurately stated, in accordance with the latest views. The rules for testing and selecting an instrument are especially valuable to one about to purchase. The beginner is cautioned not to seek the highest powers. The silicious envelops of the diatomaceæ are recommended for testing, and more than one object should always be used. "The defining power of an objective depends upon the complete correction of its spherical and chromatic aberration. Such an attribute, and of adequate extent, must be expected from every superior modern objective, for whatever purpose it may be constructed. . . . The penetrating or resolving power of an objective depends on its capability of bringing the very fine details of the surface and interior of an object into view" (pp. 58, 59). Convex and concave bodies are differentiated as follows: "When we start with the tube in a medium position, a convex body will appear lighter by raising the microscopic-tube; a globular structure and a hollow sphere, a ridge and a furrow, may thus be discriminated" (p. 99). The hollow character of the lacunæ and canaliculi of bone, however, is only demonstrated by filling their cavities with a coloring material, which has been accomplished by Gerlach (p. 298).

The best receipts of different authors, with directions for using, are given for staining, injecting, mounting, resolving, etc. Photography is not discussed sufficiently for those desiring to operate in that branch, the reader being referred to Beale's book. Mention is made of the *reproduction of color* by Gerlach. The author urges the discovery of some fluid media absolutely indifferent. Schultze's "Iod-Serum" answers a very good purpose.

In passing to the histological portion of the work, we find less space devoted to pathology than to minute anatomy, the author believing, first of all, that he should endeavor to make the normal relations clear, adding the diseased action as supplementary. The latter is said, in the introduction, to be but a modification of the former, so that, throughout the book, descriptions of each are intimately associated; for instance, in describing connective tissue, cancer is incidentally discussed, and the opinion expressed that the embedded cells may take their origin from normal glandular or epithelial cells.

Nearly the same view is entertained, in regard to secretion, that has been advocated by Virchow[1] (at least in many instances)—that of degeneration or metamorphosis of the cellular elements of the gland, with the admixture, in varying proportion, of the serum of the blood.

In the section on the *muscular and nervous system*, the statement is made (p. 322): "There is, therefore, no longer any doubt that the fasciculi of the muscles and tendons are only 'cemented' together in the firmest manner," Weismann having dissolved "this tissue-cement" by a thirty-five per cent. solution of potash.

The author declines to enter into the details of the textural structure of the *central organs* of the nervous system, which is not very complimentary to those who classify all nervous diseases upon an anatomical basis. We do not remember anywhere to have noticed the mention of "trophic" cells. In the very complete directions for examining these organs, the ganglion-cells are rendered visible by impregnating with the nitrate of uranium before immersing in the gold salt. The description given of the termination of the primitive nerve-fibres (illustrated by diagram) is interesting. "After unprejudiced examination, it can no longer be doubted that the nerve perforates the sarcolemma (whereby its neurilemma becomes continuous with the latter), and terminates beneath it in a nucleated, fine, granular, lamellated substance (terminal plates). The latter, however, pass at their borders and inner surfaces uninterruptedly into the sarcous substance of the muscular filaments (Rouget, Engelmann)." In the cornea some fibres are said to terminate in the corneal tissue itself, while others pass through the limiting membrane to the epithelium. The description of the nerve-termination in the gustatory organ and the nerve-structure of the retina is quite interesting; but we must hasten on.

We quote from pp. 427, 428, the accepted view of the *peptic glands* (one of the two forms of gastric tubules): "There are (Heidenhain, Rolett) two forms of the gland-cells to be distinguished. The one, smaller and more transparent, usually appears to line the whole interior of the tube in a coherent layer; the other, larger and more granulated, appears more externally and isolated. The latter is the peptic cell of the writers, called by Heidenhain '*Belegzelle*,' by Rolett, 'delomorphous' cell. The smaller, continuous, is called by the former observer the '*hauptzelle*,' by the latter the 'adelomorphous' cell. . . . In the fasting animal the tubular glands appear shrunken, their contours are smoother, and their *haupt*-cells are transparent. Several hours after the reception of food the peptic gastric glands present an entirely different appearance. They are swollen, the walls irregularly dilated, the *haupt*-cells are enlarged and rendered cloudy by their finely-granular contents. Finally, at a later period shrinking has again taken place, the *haupt*-cells are considerably diminished in size, but are also very rich in granular matter. Their susceptibility to staining is conformable therewith.

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[1] "Cellular Pathology," American edition, page 492.

"If the thick mucous coating which usually occurs on the inner surfaces of the stomach of herbivorous animals, especially the rodents, be examined, it will be found to contain a considerable number of the gland-cells in question, part of which appear quite unchanged, part in various stages of decomposition, and thus constitute a surplus of the ferment bodies which are so indispensable for gastric digestion."

The section devoted to the examination of the *liver* and *spleen* is replete with interest. It is already known that Dr. Frey, with others (among whom is Schmidt,[1] of New Orleans), has demonstrated the double capillary net-work—vascular and biliary—in the hepatic lobule. Support is not given to the view of Schmidt, that the lymphatics have their commencement in the biliary net-work, but the author says they "begin to encircle, in a reticular manner, the blood-vessels and biliary canals between the lobules."

As a matter of a little interest in connection with our notice of Ward "On Some Diseases of the Liver," etc., in the number of this JOURNAL for December, 1872, and our notice of Stewart's "Bright's Diseases" in the November number, our attention is called to the author's pathology of cirrhosis—*hyper-*

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[1] "Microscopic Anatomy of the Human Liver," 1870.

trophy of the connective tissue, both in the liver and in the kidney, with a doubt as to the point of departure being in the cells of the structure. Yet "Bright's disease" is said to consist of a metamorphosis of the glandular, vascular, and connective-tissue elements, commencing in inflammation of the gland-cells. It must be confessed the author's logic in arriving at this conclusion is hardly appreciated. If the former statement is correct (to which opinion we incline), the author's view of "Bright's disease" must give place to that entertained by Stewart, and the diseases be classified accordingly.

It is stated, in connection with the pathology of the *spleen*, that the pigment-cells which are found throughout the body in malarial fevers[1] originate in this organ. Mention is also made of the "surcharging of the blood with colorless cells, induced by enlargement of the spleen and lymphatic glands." It is to be hoped, ere long, investigations may settle all doubtful points respecting the physiology and pathology of the spleen.

In discussing the *cornea* the author takes occasion to give his adherence to the Waller-Cohnhein theory of the immigration of lymphoid cells in inflammation. In the present controversial period too much positiveness may not be borne out by future observation. Stricker seems to have demonstrated the proliferation of connective-tissue corpuscles, and these observations are supported by recent experiments of Dr. Chapman,[2] of New York.

We do not take leave of the work from want of interesting topics for discussion, but think we can better serve our readers by recommending its perusal. We had marked several additional portions for notice, but the concise style of the author renders it difficult to epitomize, and the limited space forbids further quotation. Looking at the work from the stand-point of the ordinary practitioner, we are much pleased, believing it will meet the wants of the class for whom it is intended better than some of the more extensive treatises. For the more scientific reader it may be somewhat marred by want of reference to the place in which the quoted authorities may be found. The translator deserves a compliment at our hands, his labor being very well done. It is to be hoped that our writers may, ere long, uniformly adopt the more correct orthography for the verb *practice.* The book is made attractive by its pretty style and well-executed (mostly original) woodcuts; its thickness, however, might have been reduced by crowding more reading-matter upon a page. C. H. R.

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[1] *Vide* Meigs's "Pennsylvania Hospital Reports," vol. i., 1868, also Aitken's "Practice," vol. i., p. 604, note by Dr. Clymer, for a full discussion.

[2] *American Journal Medical Sciences*, October, 1872.

ART. IV.—*A Practical Treatise on Urinary and Renal Diseases, including Urinary Deposits. Illustrated by numerous Cases and Engravings.* By WILLIAM ROBERTS, M. D., Fellow of the Royal College of Physicians, London; Physician to the Manchester Royal Infirmary; Lecturer on Medicine in the Manchester School of Medicine. Second American from the second revised and considerably enlarged London edition. Philadelphia: Henry C. Lea. 1872.

THE first edition of Roberts on "Urinary and Renal Diseases" has for some years been a favorite book of reference in this country as well as in Great Britain. As a practical work, it leaves little to be desired. The practical physician can readily find in it the simplest and most reliable methods for chemical and microscopical analysis of the urine—so simple, indeed, as to be easily available in daily practice. With this book as a guide, a student, with a fair microscope and a few simple articles for chemical work, can master, without difficulty, all of the necessary details in the ordinary clinical examination of the urine and urinary calculi. Thanks to the numerous recent works on the urine, of which this is decidedly the best at the present day, there is no excuse for the too frequent neglect of urinary examination. With means of investigation, plain and simple as they now are, we have no right to deprive our patients of such an important element in diagnosis as is obtainable by a rapid examination of the urine.

Although there are abnormal appearances in the urine, which are not as yet definitely connected with distinct pathological conditions, there are many which afford important indications in treatment. These points are well brought out by Dr. Roberts, and are frequently illustrated by typical cases. From a practical point of view, indeed, the work before us is decidedly the best in any language, though there are several that contain more elaborate details for accurate quantitative analysis. We can hardly say as much, however, for the physiological parts of the work, which are crude and unsatisfactory. While the author accepts, without reserve, certain novelties hardly well established, as the experiments of Oppler and others, which are thought to show that the special ingredients of the urine are actually formed in the kidneys, he is far from presenting the most recent accepted views upon the physiology of excretion.

The new edition gives evidence of careful and thorough revision, both in the text and illustrations. Two new articles —on suppression of urine, and on paroxysmal hæmaturia—have been added. On the whole, it is an admirable work, and well adapted to the wants of the practitioner. The errors of omission and commission in the physiology are not so serious as to impair its usefulness as a practical guide in the diagnosis and treatment of renal diseases.

Art. V.—*On a New Method for Extraction of Cataract.* By R. Liebreich, Ophthalmic Surgeon to and Lecturer on Ophthalmology at St. Thomas's Hospital. Reprinted from St. Thomas's Hospital Reports, vol. ii. Philadelphia: Claxton, Remsen & Haffelfinger. 1873.

In recapitulating, the method is stated as follows:

"To avoid the disadvantages in Gräfe's operation, arising out of the peripheral position of the wound, and the disadvantages in flap-extraction, arising out of the height of the flap, I propose a new method of extraction, which is to be made in the following manner:

"Puncture and counter-puncture are to be made in the sclerotic about one mm. beyond the cornea; the whole remaining incision is to pass, with a very slight curve, through the cornea, so that the centre of it is about two mms. distant from its margin. This incision may be made upward or downward, with or without iridectomy, and the lens may be removed through it, with or without its capsule.

"If, as I now operate, the extraction is made downward without iridectomy, the whole proceeding is reduced to the greatest simplicity, and does not require assistance, elevation, fixation, or narcotism, or more than two instruments. The instruments are a very small Gräfe's knife and a cystotome, which has a common David's spoon at the other end.

"In this latter form my procedure has the advantage of being, on the one hand, the least dangerous mode of extraction; and, on the other, of being able to obtain the most perfect results, viz., that condition in which the eye operated upon differs from the normal eye only by the absence of the lens, and a cicatrix of the cornea difficult to be seen."

Books and Pamphlets Received.—Wöhler's Outlines of Organic Chemistry. By Rudolph Fittig, Ph. D., Nat. Sc. D., Professor of Chemistry in the University of Tübingen. Translated from the eighth German edition, with Additions, by Ira Remsen, M. D., Ph. D., Professor of Chemistry and Physics in Williams College, Massachusetts. Philadelphia: Henry C. Lea, 1873.

Clinical Lectures on Diseases peculiar to Women. By Lombe Atthill, M. D., University of Dublin, Vice-President of Dublin Obstetrical Society, Physician to the Adelaide Hospital, Dublin, etc., etc. Second edition, revised and enlarged. With Six Lithographic Plates and Woodcut Illustrations. Philadelphia: Lindsay & Blakiston, 1873.

Obstetric Aphorisms for the Use of Students commencing Midwifery Practice. By Joseph Griffith Swayne, M.D., Physician to the Bristol General Hospital, etc. Second American, from the fifth revised English edition, with Additions, by Edward R. Hutchins, M. D. Philadelphia: Henry C. Lea, 1873.

Address in Surgery. Delivered at the Annual Meeting of the British Medical Association, held at Birmingham, August 8, 1872. By Oliver Pemberton, Surgeon to the Birmingham General Hospital, Professor of Surgery in Queen's College, etc. London: Longmans, Green & Co., 1872.

An Examination of Prof. Reese's "Review of the Trial of Mrs. Wharton for the Murder of General Ketchum." By Philip C. Williams, M.D., of Baltimore, Md. Reprinted from the *Medical and Surgical Reporter*. Baltimore: Turnbull Brothers, 1872. Pp. 31.

Fœticide, or Criminal Abortion: A Lecture introductory to the Course on Obstetrics and Diseases of Women and Children; University of Pennsylvania. By Hugh L. Hodge, M. D. Fourth edition. Philadelphia: Lindsay & Blakiston, 1872. Pp. 55.

Medical and General Science as Vindicators of the Mosaic Record, and as Repudiators of the Modern Doctrines of Development and Selection. By E. S. Gaillard, M. D., Professor of Principles and Practice in the Louisville Medical College, etc.

Surgical Diseases of Infants and Children. By M. P. Guersant, Honorary Surgeon of the *Hôpital des Enfants Malades*, Paris, etc., etc. Translated from the French by Richard J. Dunglison, M. D. Philadelphia: Henry C. Lea, 1873.

Sudden Death in Puerperal Cases. By S. L. Jepson, M. D., Wheeling, W. Va. Reported from the "Transactions of the Medical Society of the State of West Virginia." Wheeling: Frew, Hagans & Hall, 1872. Pp. 18.

Diseases of the Ovaries: their Diagnosis and Treatment. By T. Spencer Wells, Fellow and Member of Council of the Royal College of Surgeons of England, etc., etc. New York: D. Appleton & Co., 1873.

Popular Address on Organic Reforms, delivered before the Illinois State Medical Society at Rock Island, for the Session of 1872. By A. L. McArthur, M. D. Chicago: Fergus Printing Co., 1872.

Report on the Progress of Otology read before the American Otological Society at their Annual Meeting, July 17, 1872, by Clarence J. Blake, M. D. Boston: Alfred Mudge & Son, 1872.

Vegetable Organisms as Causes of Disease. By Dr. F. Steudener. Translated from the German, by Conrad Georg, M. D. Ann Arbor, Mich.: J. R. Webster & Co., 1872. Pp. 41.

Transactions of the New Hampshire Medical Society (eighty-second anniversary), held at Concord, June 11 and 12, 1872. Manchester: John B. Clark, 1872. Pp. 96.

Report on the Structure of the White Blood-Corpuscle. By Jos. G. Richardson, M. D. Extracted from the "Transactions of the American Medical Association."

Ovariotomy by Enucleation, without Clamp, Ligature, or Cautery. By J. F. Miner, M. D., Professor of Special Surgery in the University of Buffalo.

Seventeenth Annual Report of the Trustees of the State Lunatic Hospital at Northampton, Mass., October, 1872. Boston: Knight & Porter, 1873.

Transactions of the Wisconsin State Medical Society for the Year 1872. Milwaukee: Riverside Printing-House. Pp. 169.

The New Operation for coloring Corneal Opacities. By R. J. Levis, M. D., Surgeon to the Pennsylvania Pospital, etc.

Twenty-fourth Annual Report of the Indiana Hospital for the Insane, for the Year ending October 31, 1872. Pp. 64.

Annual Announcement and Circular of Long Island College Hospital, Brooklyn, N. Y. Session of 1873.

Sixth Annual Report of the Home for Incurables, West Farms, Westchester County, N. Y., 1872.

Translations.

Prepared for the New York Medical Journal by Alfred E. Walker, M. D.

Insanity and Criminality. (*Der Irrenfreund*, XIV., Nos. 6 u. 7.)—We find this subject discussed in reference to Dr. Baehr's work on "Imprisonment" (Berlin, 1871), Dr. Despine's "Psychologie Naturelle" (Marseilles, 1868, 3 vols.), and Dr. Thomson's paper in the *Journal of Mental Science* (October, 1870), on the physical and mental characteristics of the criminal class. Dr. Baehr holds that the points of resemblance between the criminal class and the insane indicate the need of a revolution in the treatment of the former, as thorough as that which was begun in the treatment of insanity half a century ago. Dr. Despine's work culminates in the statement that the criminal class is utterly destitute of moral sense, and is unconscious of its diseased moral condition, having no power to form moral judgments or conceptions; in which Dr. Thomson seems to acquiesce. The practical inference is, that the constituents of this class should be regarded and treated as diseased members of society. They are not to be made the victims of *retributive* justice on the one hand, nor allowed, on the other, to be coddled by sentimental philanthropy; but to be cured or cut off from society, with sole regard to the general welfare. The question of curability thus becomes prominent. In determining the answer, assistance may be derived from a little work by S. Ruf, "Criminaljustiz, ihre Widersprüche, etc." (Innspruck, 1870): "The great mass of criminals may be divided into two classes: 1. Habitual; 2. Exceptional Criminals." The first class (habitual) may be subdivided into two groups, one (*a*) made up of those whose lawlessness results chiefly from an abnormal organization of the brain; the other (*b*) of those having a normal brain-organization, the proper development of which has, however, been checked and perverted by unfavorable circumstances, viz., want of wholesome training, and subjection to bad examples. The second of the primary classes (exceptional criminals) is composed of men whose moral sense is developed, but has been overcome by some extraordinary combination of circumstances. The crime is an isolated act in contradiction to the general tendency of the man's life, though defects of training and weaknesses of character may have had a predisposing effect.

All the writers mentioned above agree about the existence of a morally diseased or morally imbecile criminal class, its characteristics inherited from one generation to another, and fostered by surrounding circumstances. Its degeneracy is *physical* as well as mental. The children are generally sickly, scrofulous, misshapen, with distorted heads. The *physique* of the adults is rough, angular, and awkward. They are very liable to consumption and nervous diseases. More than fifty per cent. die under thirty years of age. *Post-mortem* examinations reveal extensive organic diseases. *Intellectual* deficiency is marked from childhood on. In the schools for young criminals, one-third of the scholars pass for "weak-minded" or stupid, even after those have been removed who are fit for lunatic asylums. *Morally* this class may be called imbecile. Habitual criminals know that their offences are forbidden by law; but they have no feeling of guilt. They violate ordinary criminal laws in the same way that honorable men sometimes commit political offences.

In dealing with habitual criminals, the two groups need each its own treatment. Those whose lawlessness is due to external circumstances may be cured and restored to society. Those who have a diseased organization of the brain must be permanently incarcerated. The distinction to be made involves an investigation of the history of each case. It has been recommended even that society should adopt prophylactic measures toward hopeless criminals, and those who are sure to become such.

The proportion of the insane among the inmates of prisons is from two to three per cent. In the world at large it is only one-quarter to one-half per cent. It is probable that this disproportion is in reality greater; for the discipline of prisons checks the manifestations of eccentricity and delusions where there is little or no excitement. It is ascribed partly to hereditary influence, partly to the miserable lives led by most members of this class, and partly, perhaps, to the effect of imprisonment. This fact is of course regarded as one of great significance by all who are disposed to hold the opinions supported by the writers whose views we have presented.

Abortive Treatment of Boils and Felons. (*Gaz. Med. Ital.*, November.)—We find quoted from the *Giorn. dell Accad. Med. di Torino* the following method of treating boils and felons, which Dr. Simon regards as almost infallible: Wherever the boil may be, and of whatever size, so long as suppuration has not commenced, rub it gently with the finger wet with camphorated alcohol, pressing especially on its centre. Do this half a minute at a time for seven or eight times, and then cover the part with camphorated olive-oil. If one operation does not produce resolution, repeat it at intervals of six hours. A felon may be bathed ten minutes in camphorated alcohol, then dried and covered with the oil. The writer has never known a felon fail to succumb to three of these operations.

Substitute for the Canula after Tracheotomy. (*Nuov. Ligur. Med.*, October 10th.)—Dr. Giuseppe Tenderini recommends the use of hooks made of flat slips of lead, zinc, or any flexible non-elastic metal, to retract the edges of the wound, the hooks being held by a fillet round the neck. The advantages claimed are: 1. The ease with which the hooks can be made extemporaneously; 2. The readiness with which they are introduced, requiring no assistance from dilating forceps; 3. More effective suppression of bleeding by the pressure on the margin of the wound; 4. Greater facility in dilating the wound, so as to permit full respiration immediately; 5. Facility of access to the interior of the trachea to remove blood or other matter. The writer does not claim priority of invention.

Miscellany.

Five Hundred Cases of Ovariotomy.—At a meeting of the Royal Medical and Chirurgical Society, held November 26, 1872, T. Spencer Wells presented a report of his fifth series of 100 cases of completed ovariotomy, of which 80 recovered. The author reviews briefly the whole of the 500 cases, examining the influence which the social condition of the patient, her treatment in large or small hospitals or in private practice, the season when the operation was performed, the age and conjugal condition of the patient, the size, solidity, and connections of the tumor, and the length of incision required for its removal, and the various modes of carrying out the extra-peritoneal and the intra-peritoneal treatment of the pedicle, have upon the result of the operation. Twenty-five cases where both ovaries were removed at one operation, and 4 cases where ovariotomy was performed twice on the same patient, are then reported, and some remarks follow upon 52 cases of exploratory incisions and incomplete operations, and exceptional cases of recovery after suppuration and drainage of cysts which could not be removed.

The subsequent history of patients who have recovered after removal of one ovary proves that they may menstruate regularly, and may bear children of both sexes, or twins; and that after removal of both ovaries they do not become excessively fat, nor lose their feminine appearance or sexual instinct. Of 373 women who recovered, 36 who were unmarried at the time of the operation have married since; of these 15 have had one child, 6 two children, 3 three, and 3 four children; 2 have had twins. Of 259 who were married when the operation was performed, many being beyond the age of child-bearing, 23 have had one or more children since. No particulars could be obtained of 23 patients who recovered, but 312 reported themselves as in good health last summer. A few complained of some trifling ailment, and 17 have died of causes more or less directly connected, and 19 of causes not at all connected with ovarian disease or the operation, at various periods from a few weeks to eight years after ovariotomy. These are rare exceptions to the general rule that a woman who recovers after ovariotomy is restored to perfect health, and is enabled to fulfil all the duties of wife and mother. Supposing that the 373 women who recovered might have lived four years if ovariotomy had not been performed, they might have realized 1492 years of miserable invalid life. Taking their average age as 38 years at the time of operation, and the average expectation of life for a healthy woman of that age in this country as 29 years, we find the 373 women have secured by the operation the probability of the gross amount of 10,817 years of average healthy life.—*Lancet.*

Appointments, Honors, etc.—Austin Flint, M. D., has been elected President of the New York Academy of Medicine. Dr. W. R. Gibbes, of Columbia, has been elected Professor of Anatomy and Surgery in the University of South Carolina, in place of Dr. Darby, resigned. Dr. Andrew Otterson has been appointed Health Officer of the Brooklyn Board of Health, in place of Dr. George Cochran, who died recently. Two of the three vacant chairs in the Paris Faculty of Medicine have been filled by the election of M. Charcot into that of Pathological Anatomy, and of M. Léon Le Fort into that of Operative Medicine. Dr. Spaeth was formally installed Rector of the University of Vienna, on the 18th of November. The late Mr. Holmes Coote had been suffering from general paralysis for some time before his death, and was in straitened circumstances. His son, as well as the son of Mr. Baker Brown, will apply for admission to the Royal Medical Benevolent College at the next election. Prof. Huxley has been elected by a considerable majority over his opponent, the Marquis of Huntly, to the Lord-Rectorship of the University of Aberdeen. The University is divided into four nations. In one—the Moray nation—the votes were equal; of the other three nations, Prof. Huxley had a majority in two. The total number of votes on each side was: For Prof. Huxley, 274; for the Marquis of Huntly, 221. The chair of Surgery in the Royal College of Surgeons, Ireland, made vacant by the resignation of Mr. Hargrave, has been filled by the election of Mr. William Stokes.

The Late Dr. W. S. Reynolds.—At a meeting of the Medical Board of the Roosevelt Hospital, held December 16, 1872, the following resolutions were adopted:

Whereas, Dr. Wm. S. Reynolds, late House Surgeon to the Roosevelt Hospital, has been suddenly taken away by death while in the active discharge of his duties: therefore—

Resolved, That the Medical Board of the Roosevelt Hospital desire to express to the family of Dr. Reynolds their appreciation of his high character and attainments, and of his faithfulness in the performance of the duties devolving upon him, and to offer their sincere sympathy in this heavy affliction, by which he has been cut off on the threshold of a promising and honorable career;

Resolved, That these resolutions be entered upon the Minutes of the Medical Board, and be published in the *Medical Record* and the New York Medical Journal, and that a copy be forwarded to the family of the deceased.

Robert Watts, M. D., *Secretary*. A. Clark, M. D., *President*.

Archives of Scientific and Practical Medicine.—The first number of this journal, which appeared early in January, amply fulfils the promises made in the prospectus. The original department opens with a highly-interesting case, described by Drs. H. D. Sands and E. C. Seguin, of Traumatic Brachial Neuralgia, treated by excision of the cords which go to form the brachial plexus. This is followed by a paper on Cerebral and Visceral Embolism, by Dr. W. H. Draper, and by contributions from Drs. Brown-Séquard, H. D. Noyes, Edward Seguin, Mary C. Putnam, and others. Some space is devoted to translations, reviews, analyses of original papers by foreign authors, and reports on the progress of medical sciences abroad. The typographic and general appearance of the journal is very creditable to the publishers.

The Boston Medical and Surgical Journal.—Our venerable contemporary, in beginning its eighty-eighth volume, announces some important changes in the editorial and general management. The professional control has been assumed since July, 1872, by a board of managers composed of six members of the Massachusetts Medical Society, who have now secured the services of three editors, J. Collins Warren, M. D., Herman Dwight, Jr., M. D., and Frank W. Draper, M. D. Besides these, the names are given of sixteen reporters, making a total of twenty-two medical gentlemen who are interested in making the *Journal* all it should be. With this division of labor we may expect to see every department ably filled, and we hope the profession will duly appreciate the enterprise of the managers.

Bogus Diplomas.—The *Philadelphia Medical Times* calls attention to the fact that the diploma-mongers, who were supposed to be extinguished last year, are still carrying on their traffic unmolested, and comes to the conclusion that, "so long as there are men who are willing to pay for diplomas irregularly obtained, there will always be men ready to furnish them." This may be true, but we believe, nevertheless, that it is in the power of the Legislature to make the business, like counterfeiting, a very dangerous one. If not, we may soon have every man printing his own diploma, and dating it from any phantom college he chooses.

The Popular Science Monthly.—The February number of this excellent journal contains several articles that will prove fully as interesting to the professional as to the general reader. The leading papers are by men of eminence in the scientific world, and for the most part deal with subjects to which the modern physician cannot be indifferent. In addition to numerous original contributions, THE POPULAR SCIENCE MONTHLY furnishes its readers periodically with an admirable variety of selections and translations, and a comprehensive summary of scientific news.

A New London Journal.—The first number of the *Medical Record*, a new weekly medical journal, to be published in London, was announced to appear on the 8th ult. It has not yet reached us, but we judge from the prospectus that it is to be a first-class periodical. It makes the usual appeal to the "busy practitioner," for support.

Obituary.

The death is announced of Dr. Félix Voisin, which took place at Vanves on November 23d, in the 78th year of his age. He was formerly principal physician to the Bicêtre Asylum, a most distinguished alienist, and author of several works on mental diseases, the most remarkable of which is "Le Traitement intelligent de la Folie," published in 1847. He leaves two sons, both eminent in their way. One, who bears the same Christian name, is a member of the National Assembly; and the other, Dr. Auguste Voisin, who has adopted the specialty of his father, is physician to the Saltpétrière. The deceased took his degree in 1819.

Mr. Holmes Coote, F. R. C. S., well known for his valuable contributions to anatomy and surgery, and for some time senior surgeon to St. Bartholomew's Hospital, died December 22d, aged fifty-four years.

Dr. Warren Stone, of New Orleans, widely known throughout the South as a surgeon, died December 6, 1872, in that city, aged sixty-five. Dr. Stone was a graduate of Pittsfield Medical College, Massachusetts.

M. Pouchet, the distinguished Rouen zoologist, Corresponding Member of the Académie des Sciences for the section of Zoology, died December 6, 1872, in the seventy-fourth year of his age.

Dr. Samuel Willey, one of the oldest physicians in St. Paul, Minnesota, died recently.

Dr. René La Roche, of Philadelphia, died December 9th, aged seventy-seven years.

Dr. Samuel L. Hollingsworth, of the same city, died December 14th, in his fifty-seventh year.

Dr. Freitz, Professor of Anatomy at the University of Prague, is deceased.

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Original Communications.

Art. I.—*On the Action of Rhus Venenata and Rhus Toxicodendron upon the Human Skin.*[1] By James C. White, M. D., Professor of Dermatology in Harvard University.

There are two species of plants growing abundantly in the United States, which have long been known to produce a so-called poisonous action upon the skin of persons touching or approaching them. These are *Rhus toxicodendron* and *Rhus venenata*, a genus familiar to every one in the form of our common sumach, belonging to the family *Anacardiaceæ*. The former, *R. toxicodendron*, by earlier botanists called *R. radicans*, is a vine of very common occurrence, running over stone fences and along way-sides, or climbing trees to a considerable height, and attaching itself to these surfaces by lateral rootlets. It is popularly called poison-ivy, poison-vine, poison-oak, mercury. The other species, *R. venenata*, *Rhus vernix* of Linnæus, commonly known as poison-sumach, poison-dogwood, poison-elder, poison-ash, is a tree growing mostly in swampy places, and reaching the height of twenty feet or thereabout. The botanical characters of both may be found in all works on our native sylva and flora, but, as these descriptions are often very brief, and not sufficiently explicit to present a characteristic picture of the plants to the general reader,[1] and inasmuch as cases of poisoning by them are often the result of ignorance of their appearance, and many perfectly harmless plants are, moreover, avoided on suspicion that they are either one or the other of these, I prefer to give in this connection, in brief, the more graphic and popular descriptions to be found in the second edition of Bigelow's "Florula Bostoniensis," published in 1824, and long out of print, a book as fresh and charming still to lovers of wild-flowers, as when its gifted author, some sixty years ago, first gathered and painted them.

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[1] Read before the Boston Society of Medical Sciences, November 26, 1872.

"*Rhus vernix.* L. Poisonous Sumach or Dogwood.—This species grows in swamps, where its fine smooth leaves give it the air of a tropical shrub or tree. The trunk is from one to five inches in diameter, branching at top, and covered with a pale grayish bark. The wood is light and brittle, and contains much pith. The ends of the young shoots and the petioles are usually of a fine red color, which contributes much to the beauty of the shrub. The leaves are pinnate, the leaflets oblong or oval, entire, or sometimes slightly sinuate, acuminate, smooth, paler underneath, nearly sessile, except the terminal one, from seven to thirteen in number. The flowers, which appear in June, are very small, green, in loose axillary panicles. The barren and fertile flowers grow on different trees. The fruit is a bunch of dried berries, or rather drupes of a greenish white, sometimes marked with slight purple veins, and becoming wrinkled when old. They are roundish, a little broadest at the upper end, and compressed, containing one white, hard, furrowed seed.

"*Rhus radicans.* Poison-Ivy.—A hardy climber, frequently seen running up trees to a great height, supporting itself by lateral roots, and becoming nearly buried in their bark. The leaves are ternate, and grow on long, semicylindrical petioles. Leaflets (3), ovate or rhomboidal, acute, smooth, and shining on both sides, the veins sometimes a little hairy beneath. The margin is sometimes entire, and sometimes variously toothed and lobed, in the same plant. The flowers are small and greenish white. They grow in panicles or compound racemes on the sides of the new shoots, and are chiefly axillary. The berries are roundish, and of a pale green color, approaching to white. Common about the borders of fields.—*June.*"

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[1] Extract from Gray's Manual:

"4. *R. venenata*, D C. (Poison S. or dogwood). Smooth or nearly so; leaflets 7–13, obovate-oblong, entire. Swamps. June.—Shrub 6°–18° high.

"5. *R. toxicodendron*, L. Climbing by rootlets over rocks, etc., or ascending trees; leaflets 3, rhombic-ovate, mostly pointed, and rather downy beneath, variously notched, sinuate or cut-lobed—or else entire, then it is R. radicans.—*June.*"

I have prepared for illustration specimens of the foliage of both species, as well as of those plants for which they are sometimes mistaken, and to which in the popular mind, as their common names suggest, they bear the strongest resemblance. Purposely picked, as some of them were, while undergoing their autumnal change of color, it will be easily understood how many unwary gatherers of the painted foliage of this season may be enticed by the gorgeousness of their tints into a grievous acquaintance with their subtile virulence.

Rhus toxicodendron, or the poison-ivy, might readily be taken to be our common woodbine, or Virginia creeper (*Ampelopsis quinquefolia*,) both from the manner of its growth, locality, and brightness of its tints in the fall. It will be seen, however, at a glance, as its specific name implies, that the number of leaflets in the latter is five, while in the poison vine there are but three. This will always serve as a distinguishing mark between them, even if the difference in the shape of the leaflets be not observed, though the very great variation in form in those of *R. toxicodendron* should be carefully borne in mind.

Rhus venenata, the shrub or tree, bears some resemblance, as will be seen on comparison, in the shape of its pinnate leaves to those of the elder (*Sambucus*) or sumach (*R. typhina*, or *R. glabra*). The serrate edges of these, as well as their more pointed tips, would be sufficient to distinguish them from this dangerous associate even for persons not observant of less conspicuous details. At a little distance, however, the common sumach might readily be confounded with small-leaved specimens, and considerable variation in the size and breadth of the leaves of the poisonous species, as will be seen, prevails. It may be safely said, however, that several common and harmless shrubs and trees are feared and shunned for this a hundred times where the true poisonous sumach is once mistaken for other and innocuous plants by persons unacquainted with it; for, although by far the more virulent of the two, it is of far less common occurrence and grows in less frequented localities than *R. toxicodendron.*

The peculiar action of these plants upon the human skin has long been known and dreaded, but very few accurate descriptions of its effects are to be found either in books of medicine or botany. Writers have generally regarded the inflammatory affection of the skin provoked by contact with the plants, or their emanations, as of an erysipelatous nature, an opinion quite as erroneous as many of the fanciful notions prevalent concerning its character. Bazin, for instance, in his "Affections cutanées artificielles," says: "Je dois enfin vous dire quelques mots des singuliers effets produits par deux plantes qui croissent en Amérique, le Rhus radicans et le Rhus toxicodendrum. De ces arbustes se dégagent incessamment, si l'on en croit les auteurs, des émanations irritantes et toxiques au plus haut degré; malheur à l'imprudent qui s'abandonne au sommeil sous leurs ombrages! son corps se couvre presque aussitôt d'un exanthème vésiculeux, avec gonflement énorme, et en même temps se déclarent des symptômes généraux qui prennent la forme d'un véritable empoisonnement aigu, et dont la violence peut entraîner la mort dans un temps très court."

After that there should be no doubt either as to the existence or habitat of the fabled upas-tree.

Van Hasselt, in his "Giftlehre," speaks of the effects of the poison as a painful dermatitis, either in the form of an urticaria, erythema, or erysipelas bullosum, which may terminate in an extensive and protracted suppuration.

Observation of a few cases, as they present themselves in the practice of every physician, will satisfactorily establish the changes in the skin to be simply of an eczematous nature, although of so severe a type, in some cases, as to produce quite as marked deformity of parts as true erysipelas. As the character of these changes can be best studied by daily observation throughout their *whole* course, and as such opportunities are not often afforded, I preferred to create one for my purpose. In the study of botany and ornithology I have spent a good deal of leisure time in woods and fields during the past twenty years, and have always collected without gloves. I had never, however, been poisoned by ivy, although I had never specially shunned or sought contact with it.

Case I.—On September 28th, of this year, I picked a large bunch of the gorgeously-tinted leaves of *Rhus venenata* from a tree some ten feet high, growing in a swamp in Dedham. It was a warm and sunny afternoon, and, my botanical box being filled with other specimens, I brought them home in my hand, from the palm of which the epidermis had been torn in several places a few minutes before by falling upon the uncut, splintered portion of a stump. They were carried in this hand at least an hour and a half, and during the evening were repeatedly handled while arranging them for the herbarium. Some of the still green and unchanged leaves were also picked. The conditions were thus as favorable as possible for the absorption or action of the poison. Not the slightest effect was produced upon the skin, however. I thought I felt during the evening, while working over them, directly beneath the heat of an argand gas-burner, a sensation of irritation, or acridity about the eyes and throat. They were subsequently handled freely for ten days every morning, while changing the driers in the press.

October 6*th.*—I picked at Fresh Pond a large quantity of *R. toxicodendron*, specimens changed to autumn tints, and others still of a glossy green, from plants running over stone-walls and climbing high trees. Both leaves and stems were collected. These, too, were handled freely on a warm afternoon, and repeatedly afterward in the press. It was absolutely inactive upon my skin.

October 10*th.*—I again visited the swamp where the poison-sumach or dogwood grows in abundance, after specimens of the fruit, but failed to obtain them. I picked many of the brilliant leaves, however, and twigs, and branches, with foliage still unchanged in color. The juice, which exuded freely from the broken wood, was rubbed upon my hands in several places and allowed to dry there, and the leaves touched my face repeatedly while gathering them. I again thought I perceived in my air-passages and eyes, at the time, and later in the evening again while pressing the specimens, the same impression of acridity. Nothing was noticed upon the skin indicating any action upon its tissues until, two days later (October 12th), a single vesicle, with the peculiar thick cover and somewhat dark look so often seen, appeared upon the back of a finger, but accompanied by no sensation.

October 13*th.*—The third day, a single and similar, though somewhat larger, vesicle appeared upon my left wrist, to which two others joined themselves on the following or fourth day, thus making a very small group. At the same time, that is the 14th, a single additional vesicle showed itself some three-quarters of an inch from the first-comers upon the finger and wrist.

October 17*th.*—One of the vesicles, which appeared last upon the knuckle, without any external irritation, increased to three times its original size, with burning and itching sensations. The other efflorescences quiescent, or receding.

October 19*th* (no specimens having been handled for a week), a new and very large vesicle of irregular shape appeared on the back of the last phalanx of the right thumb, covered with so thick a roof as to appear untransparent, as if the effusion had taken place in the lowest layer of the rete mucosum.

October 21*st.*—Two new vesicles, one on the back of the left forefinger, the other on the thumb near the base.

October 23*d.*—All the groups, old and new, have become enlarged by the appearance of new vesicles at the peripheries (excepting those upon the wrists, which had been opened for the purpose of an experiment described below), and one new cluster appeared on the back of the right middle-finger. All itch and burn extremely.

October 26*th.*—The original vesicles and papules have, in many of the clusters, resolved themselves apparently into two or three times their number of smaller efflorescences, the whole patch flattening down and assuming a darker brown tinge.

October 27*th.*—A large, single vesicle, with the thick and opaque covering peculiar to its seat, has struggled up into distinct prominence in the palm of the right hand, near its ulnar border; a fresh one also at the base of the nail of the left thumb. At this date there are seven single or groups of efflorescences, on different parts of the hands in all stages of development or involution.

November 1*st.*—Another small vesicle has appeared in the right palm, half an inch from that of October 27th. The earlier vesicles have nearly all flattened down to the level of the general surface.

November 3d.—A single vesicle shows itself upon the internal lateral surface of the left thumb. This was the last to appear, and from this date all the efflorescences gradually subsided, and after a fortnight were no longer perceptible. At the present time, November 26th, their seats are still defined by the more glossy look of the new epidermis which covers them.

This may be taken as a description of the effects of the poison upon the human skin in its mildest form. The changes, however, as described, are typical of the peculiar efflorescence in all cases. In what respects it falls short of the manifestations in its severest forms may be learned by comparison with the histories of the following cases.

Case II.—Several years ago I was called to see a young lady, who, a few days previously, had come in contact with poison-ivy while gathering autumn leaves. Her whole head was greatly swollen, and the features so distorted that no one could recognize her. On closer inspection the skin of the face and neck was felt to be deeply œdematous and was largely covered with vesicles of all sizes, many of which were seated on an erythematous base, others being still in their papular stage of development. There were also numerous large excoriations, from which fluid was freely exuding, stiffening in places on drying, and forming soft crusts. The ears were much thickened, and were dripping with the escaping serous exudation. The hands were also affected, being thickly covered upon their backs with groups of small vesicles, while upon the palms numerous vesicular exudations were dimly seen beneath the thickened epidermal coverings, trying to push themselves above the level of the general surface. The other parts of the body were unaffected. The subjective symptoms were great itching and burning of the parts affected, with the feeling of local discomfort, consequent upon so great swelling of the features. The eyes were nearly closed. There was a slight general febrile action.

New efflorescences continued to appear for several days, but the course of all the cutaneous manifestations was abbreviated, and the œdema immediately reduced by the local treatment which was employed.

The following year the same patient, then nineteen years old, was bathing at the sea-shore in August, and, while climbing up from the water over the rocks, her bare knee and leg came in contact with the poisonous vine. I saw her a few days afterward. There was then a long strip of reddened skin, several inches in width, covered with vesicles and a few papules, running upward and downward from the knee. The chin was occupied by a large group of papules, a few of which had already advanced to the vesicular stage. The skin beneath one eye was also puffed and reddened. The further progress of the affection was quickly checked by local applications, and, as in the previous attack, the effects of the poison at the end of some two weeks had entirely disappeared.

Three years afterward, at New-Year's time, I was again called to see this young lady. Her face and hands were affected in a manner similar to that first described, though the inflammatory process was less severe. The parts were less swollen, but there was an abundant eruption of the vesicles and flow of serous exudation from the excoriated parts. The appearances were wholly characteristic of ivy-poisoning, yet she had not been out of the city, and it was mid-winter. On inquiry, I found that a box of Christmas green had been received from the country, which she had used in decorating the house. Among them were sprigs of poison-ivy leaves, the cause and explanation of the attack.

Case III.—Late in October, 1871, I was called to see a gentleman who, in cleaning up his grounds at the sea-shore a few days previously, had handled the poison-vine which grew upon the place in great abundance. His hands, especially the lateral surfaces of the fingers, were then thickly covered with vesicles, and his face and genitals were badly swollen. The following day the eruption appeared upon the arms and about the thighs and abdomen, and continued to spread for several days, until at last it presented the following appearances:

The face and ears were of a lurid-red color, greatly swollen, and dripping with fluid exudation. The neck, chest, and abdominal wall, were also reddened, and occupied by large patches of flattened papules and vesicles, and by moist excoriations. The genitals were enormously distended by œdema, and the scrotum was running with serum. The arms and legs were also œdematous, and largely occupied by fields of the peculiarly characteristic vesicles of the affection. The patient was of a highly-nervous temperament, and suffered tortures from the severe itching which accompanied the eruption. The skin was so universally irritable that no clothes could be worn for forty-eight hours, when the affection was at its height, and a sheet or blanket was the only covering during this time. Sleep without powerful anodynes was impossible for several nights in succession. There was but little fever or constitutional disturbance, however. Applications were almost constantly made to the whole surface, and, after the seventh or eighth day from the first appearance of the eruption, there were no new manifestations, and the skin rapidly returned to its natural state.

These cases may be taken as representatives of the severer forms of poisoning, as they ordinarily occur, and they are the severest of my own experience. To what further development they might have extended without treatment it cannot be said. There are reports, however, of still graver effects. Dr. Bigelow, in his "Medical Botany," quotes Kalm as saying, in his travels, that he had known persons to be so swollen by the exhalations of *Rhus venenata* as to be as stiff as a log, and capable of being turned about only in sheets; and Dr. Thacher's report of a case, in which the head and body were swollen to a prodigious degree, so as to occasion loss of sight for some time, as well as the loss of the hair and nails. Dr. Bigelow adds that he had been told of cases in which death appeared to be the consequence of this poison, although he had never known a fatal case.[1]

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[1] I am permitted to publish in this connection the following account of a case which occurred many years ago in the family of a professor in our university:

"My wife's brother, of Brookline, a child of six years, died of poison by ivy in the autumn of 1819, having been twice before poisoned during the previous summer. The circumstances were these:

"A servant-boy living in the family, being insusceptible of poison by ivy, had been employed in pulling up all the vines of that plant found growing in the grounds about the house. When his task was finished, he was made to wash his hands thoroughly with hot water and soap, and afterward with vinegar. Mrs. ———, who feared that the boy, notwith-

Whether these extraordinary results, thus mentioned by Dr. Bigelow, are to be referred to the legitimate action of the poison, or to some peculiar and exceptional condition of the persons when exposed to it, cannot now be determined. However, they in no way affect the conclusions to be drawn from the history of the cases I have cited in relation to the character of its cutaneous manifestations. In these, and in all the many I might quote from personal observation, the pathological changes of the skin are identical, differing only in degree of intensity and extent of distribution. In the mild case, a slight erythema surrounding a papule or vesicle, with a small underlying infiltration or exudation. These are all the phenomena observed, whether we have a single efflorescence or several individuals grouped together. Variations in the course and development of the different lesions do occur.

Taking the simple vesicle with scarcely any erythema surrounding it, or any very perceptible infiltration of the underlying tissues as the type of the eruption, whether occurring singly or in groups, we may have in a small percentage an abortive attempt at vesiculation, and an arrest of development at the papular stage (a failure, that is, of the free exudation to force apart the layers of epithelial cells); or a considerable infiltration into the papillary layer may elevate a cluster of the vesicles noticeably above the general surface; or they may be surrounded by a well-defined erythema or congestion of the tissues immediately surrounding them, in consequence mainly

standing his supposed invulnerability, might possibly be injured by so much handling of the poisonous stuff, stood by to enforce the operation. In the afternoon, at his own request, he was allowed to take little R. to Jamaica Pond for a bath. Having stripped the child, he immersed him, holding him with his hands under the armpits, and afterward rubbed his back with his open palm.

"After two or three days the child was taken ill, and grew rapidly worse. Deep ulcers made their appearance under the armpits, and the skin of the back exhibited, in aggravated form, the usual marks of poisoning by ivy. He died at the end of the third week of his sickness. The attending family physician was the late Dr. Wild.

"The child had been healthy, although not robust. Perhaps the two previous poisonings, from which, however, he seemed to have perfectly recovered, had weakened the power of resistance in the constitution, and so contributed to the fatal result of the last attack. He died on the 6th of October.

"CAMBRIDGE, *December* 24, 1872."

of the scratching provoked by the local burning and itching, the only subjective symptoms present.

In the severe cases we have multiplication of the number of vesicles, either single or massed in close contiguity, and covering large surfaces, or by fusion forming blebs; a greater infiltration into the underlying corium with proportionate distention of the capillaries and external redness; and a free exudation of serum into the cutis. The overfilling of the vesicles causes a rupture of some of their epidermal coverings and the discharge of their fluid contents upon the surface, forming moist excoriated surfaces, covered in part with crusts.

These, it will be seen, are the well-recognized lesions which characterize the inflammatory process of the skin we call eczema, and, if opportunity were afforded for fine dissection, we should no doubt find the same pathological changes of tissue which constitute the infiltration, papule and vesicle formation of the progressive stage of idiopathic eczema. It may be that there are skins so peculiarly constituted, or conditions of such intense virulence of the poison, that a true dermatitis or erysipelatous inflammation may be excited under its influence, but I have never seen them, and doubt their occurrence. The constancy of type in the tissue-changes, in every case and of all grades observed by me, is satisfactory evidence to my reason that the affection is always of an eczematous, never of an erysipelatous nature.

If, then, the cutaneous manifestations of ivy-poisoning are those of eczema, have they no individuality, no characteristic marks by which they may be distinguished from those of the idiopathic affection? There are differences to be recognized by the practised eye, but they are more easily detected than described. First, with regard to peculiarities in the seat of the eruption upon the hands, the parts naturally the most frequently affected. It appears most easily, one may say, and therefore generally first upon the lateral surfaces of the fingers, or along their edges, later upon the dorsal surfaces, and latest upon the thickened palms. It is more scattered, more irregular in its distribution, than the eruption in ordinary eczema. The character of the efflorescence, too, is strikingly peculiar, though indescribable. It is more uniformly vesicular than vesicular eczema. The vesicles seem to be born vesicles without having gone through an intermediate papular stage of development. They appear somewhat less transparent, as if the effusion had taken place in the lowest cells of the rete Malpighii, and have generally a peculiar tinge of color, which can only be called lurid. Upon the palmar surface their epidermal coverings are so dense that they look and feel more like papules, but the fluid character of their contents may yet be dimly seen and brought to the surface by puncture with a needle. These are some of the differences, minute it is true, but still sufficiently characteristic to an experienced observer, by which a case of rhus-poisoning may be recognized and distinguished from idiopathic eczema.

In its later stages, those of retrogression as they may be called, the skin returns to its natural state without any marked change in the character of the eruption. In the mild cases the process of inflammation is seldom carried so far as to transform the vesicle into a pustule, and after reaching its height its serous contents are slowly absorbed, and it flattens down, leaving a fugitive, dull-colored stain to mark its seat at times. In the severer forms the œdema and erythema rapidly subside under treatment, and the excoriations, crusts, and infiltration, disappear in the same manner as in an ordinary case of acute eczema.

The duration of these alterations of the skin, according to their severity, varies less than would be believed without close observation. In my own case (one of the mildest of cases and untreated), vesicles continued to appear from October 12th up to November 3d, and the whole period of development and involution was from five to six weeks. In the severest attacks, where the changes of tissue reach their highest possible development, and affect large surfaces of the body, the duration is seldom, if ever, more protracted than this, and the individual efflorescences run as rapid a course as those of the same degree of development in the former. The duration of an attack depends largely upon the protraction of the period during which fresh efflorescences manifest themselves. Under local treatment constantly applied, this period, without reference to what may be called the sequelæ, and which will be spoken of below, according to my own experience, generally lasts from ten to fourteen days from the appearance of the eruption. To this is to be added the necessary time for the natural involution of the efflorescences last to appear, according to the degree of development to which they severally attain, from ten to fourteen days more, and we have for the ordinary course of the affection a period of from three to four weeks. How long it might continue without treatment in severe cases, I have no means of knowing except the observation of my own very mild case, in which fresh vesicles were developed for twenty-two days.

Sequelæ.—The question of duration leads us naturally to consider that of other possible effects of the poison upon the skin or general economy, subsequent to what we may call its primary action, above described. There are several popular beliefs bearing on this point, which have perhaps some foundation in facts improperly observed and illogically used. An opinion prevails, for instance, that in a year after the first attack there will be a repetition of the original manifestations upon the skin, which may be repeated for several seasons. Another is entertained that a variety of cutaneous affections are developed in consequence of its action at indefinite and even long periods after the first attack. If there be any apparent ground for the former, it is mere coincidence in point of time, misapplied to circumstances which have given rise to the latter, for no elements of periodicity in any subsequent possible manifestations of the poison have been established, so far as I know. There may be some reasons, however, for the belief that certain diseases of the skin sometimes follow rhus-poisoning. I have had many patients who have ascribed the development of various of these affections to such cause. They say, "I always had a healthy skin until I was poisoned by ivy, and afterward it was affected in this way," after an interval of weeks, months, or it may be years. In the existing impossibility of determining the cause of diseases of the skin only in highly-exceptional instances, it is not strange that people should refer subsequent affections of its tissues to the continued or intermittent action of an agent capable of producing at first so striking and severe changes as they have once experienced, and that they in many such instances should ascribe as a cause what is only an irrelevant preceding event. Yet there are, I think, good grounds for the belief that certain affections of the skin do follow poisoning by rhus in some cases, which would not otherwise have occurred. This, however, by no means authorizes the conclusion that they are immediately caused by its action, or are in any way specific in their character. There is no evidence, I think, of a continuance or renewal of the operation of the poison, after its primary impression upon the skin has exhausted itself. The characteristic features of the cutaneous manifestations of this period do not repeat themselves in the subsequent affections, which, I think, may be fairly referred to the prior poisoning as an indirect cause. They are forms of ordinary eczema, and, in rarer instances, of acne only, so far as my observation teaches. I have already referred to the many patients with these common diseases of the skin who have ascribed them to having been at some previous time poisoned by ivy. I prefer to use in this connection, however, for confirmation, another class of cases, those, namely, in which I have seen these affections develop subsequent to such attacks of poisoning as have also occurred under my personal observation.

1. A young lady, after being badly poisoned in October upon the face, after a rapid recovery, had in the following January an attack of facial eczema.

2. Another young lady, after severe poisoning of the face and hands, had in a few months an outbreak of facial acne.

3. An old gentleman, whose hands had been a short time previously poisoned, had, immediately following his recovery, an eruption of eczema covering his arms.

4. A young man, after being severely poisoned in the face, was immediately attacked by acne of the part, which lasted a long time.

5. A gentleman of middle age was poisoned upon the hands and forearms. A few months afterward he had an obstinate subacute eczema of the legs.[1]

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[1] Dr. Bigelow, in his "Medical Botany," states that Dr. Pierson, who was badly poisoned while assisting him in the experiments with the juice of *Rhus venenata*, had eczema of his hands for a year afterward.

In all these cases, it is to be understood, the secondary affection mentioned occurred for the first time in the patient's history, and after the specific primary manifestations of the poisoning had disappeared. It is impossible to say that just the same affections might not have appeared at just these times, even if the subjects of them had not been previously poisoned, because they are of such frequent idiopathic occurrence; but, considering that eczema and acne are pathological conditions of the skin of such a nature as might readily follow the disturbance in its tissues and glands necessarily consequent upon severe poisoning by rhus, it should not be considered illogical to refer their appearance under such circumstances to the morbid impression it made. These, however, are the only possible sequelæ in my experience that might be so interpreted.

Susceptibility to its action seems never to diminish in the same individual, however often affected by the poison.

Chemical Nature of the Poison.—What the real nature of the poisonous principle contained in these plants, capable of producing such peculiar and severe effects upon the human skin, might be, was largely a matter of conjecture, in spite of many attempts to reach it by chemical processes, until a few years ago. Knowledge that its emanations were often as active as contact with the plant of course suggested its volatile nature, but all attempts to isolate and fix it were in vain. The yellowish, milky juice, which exudes from the broken or bruised parts of the plant, possesses, as is well known, the property of changing to a brilliant black after a short exposure to the air, and of producing an indelible black stain upon cellulose. The beautiful lacquer of the Japanese is made from the juice of a species of rhus closely allied to our native plant. Prof. Gray, in his recent interesting address on "The Sequoia and its History," to the American Association for the Advancement of Science, says: "Our *Rhus toxicodendron*, or poison-ivy, is very exactly repeated in Japan, but is found in no other part of the world, although a species much like it abounds in California. Our other poisonous rhus (*Rhus venenata*) is in no way represented in Western America, but has so close an analogue in Japan that the two were taken for the same by

Thunberg and Linnæus, who called them both *Rhus vernix*." Of the history of the preparation of this celebrated varnish of Japan, and its effects upon the workmen engaged in its manufacture and use, very little is known. The juice is taken from trees three years old, and is prepared for use as a varnish only by a "tedious process." When first caught it is of a lightish color, and of the consistence of cream, but it grows thick and black on exposure to the air. The finest sorts of firs and cedars are selected, and the varnish is so transparent that, when laid on pure and unmixed, every vein of these woods is clearly seen. The process of applying it is extremely slow, five coats at least being laid on and ground down. Generally, a dark ground is spread underneath beforehand, "recourse being frequently had to the fine smudge which is caught in the trough under a grinding-stone." Native cinnabar, sulphate of iron, finely-powdered charcoal, and other substances, are also employed for coloring the wood before varnishing, and sometimes gold-leaf ground very fine is mixed with the lacquer.

This account, by far the fullest I could find, is taken from a book of travels published one hundred years ago; while only in Kaempfer, "*Amœnitatum Exoticarum*" (1712), do I find, through the kindness of Prof. Gray, an allusion to the action of the varnish upon those engaged in its use, as follows: "Vernix exsperat halitum, ex quo labia tumescunt, et caput dolet; unde in deliniendo artifices strophiolo os et nares obligant."

I have heard of a person who had been poisoned by the presence of imported lacquered-ware in apartments, but I report the case only on "hearsay" evidence.

In 1865, Prof. John M. Maisch published the first satisfactory account of the chemical nature of this poison in the proceedings of the American Pharmaceutical Association. As the results of his important investigations have never been fully introduced to the profession, I do not hesitate in this connection to offer a brief account of them.

In 1857, Dr. Khittel made an analysis of the constituents of *Rhus toxicodendron*, a translation of which appeared in the *American Journal of Pharmacy*, 1858. He came to the conclusion that its active principle depended on a volatile alkaloid, obtained by distilling an infusion of the dried leaves.

As the leaves are so volatile that they give up a large part of their poison while drying, it is evident that boiling down an infusion of them would, as Prof. Maisch says, be the best method for obtaining the least possible quantity of the poisonous principle, if, indeed, it could be obtained by this process at all.

Prof. M. began his investigations by attempting to extract and preserve this alkaloid, but satisfactorily demonstrated that it does not exist, even in the fresh plant. He then enclosed some fresh leaves in a tin box and introduced some moistened test-papers. The next morning the curcuma and red litmus-papers were unaffected, but the blue litmus-papers had been colored strongly red, proving that the exhalations contained a volatile acid. This acid was extracted by two different processes, which it is unnecessary to repeat here. It was colorless, strongly affected blue litmus, and neutralized bases, the salts with the stronger bases giving a distinct alkaline reaction. With a great variety of reagents it gave reactions identical with those of formic and acetic acids, but its behavior with oxide of silver, nitrate of silver, oxide of mercury, and corrosive sublimate, proved its individuality, and established its character as a new organic acid, for which Prof. M. proposed the name of toxicodendric acid.

"That it is the principle to which the poison-oak owes its effects on the human system was proved to my entire satisfaction," he says, "by the copious eruption and the formation of numerous vesicles on the back of my hand, on the fingers, wrists, and bare arms, while I was distilling and operating with it . . . . I may state here," he tells us in the early part of his communication, "that I have frequently collected the leaves, flowers, and fruit of *Rhus toxicodendron* without ever experiencing any ill effects. I have handled all parts of the plant with impunity, and have even spread the juice over my hands, without feeling more than a slight itching upon the upper side of the hand, which immediately disappeared on washing the hands with water. In a word, I considered myself so little subject to its influence that I collected the leaves for all these experiments myself. I could hardly expect to try the efficacy of the poisonous principle, when isolated, upon my own person; the result, however, proved to be very different. Several persons, coming into the room while I was engaged with it, were more or less poisoned by the vapors diffused in the room; and I even transferred the poisonous effects to some other persons, merely by shaking hands with them." (Whether after washing hands?) "The dilute acid, as obtained by me, and stronger solutions of its salts, were applied to several persons, and eruptions were produced in several instances, probably by the former, though not always, which was most likely owing to the dilute state of the acid. Whenever this was boiled, I always felt the same itching sensation in the face and on the bare arms which I experience on continual exposure of my hands to the juice of the plant. . . . Whether the toxicodendric acid is, to a greater or less extent, lost in drying, I am as yet unable to say." As regards its isolation it is easily effected, and the expressed juice, preserved by alcohol, he believes to be the best preparation. Prof. M. closes his interesting communication with the promise that, if time permits, he may attempt to prepare the acid in more concentrated form, and to determine its composition. It is to be regretted that, as he states in a letter to me, he has thus far been unable to make further researches concerning it.

There can be little doubt, I think, of the correctness of Prof. Maisch's views with regard to the chemical nature of the poison, and they are entirely consistent with our knowledge of its action upon the human system.

How far this volatile principle may be carried in the air in a sufficiently concentrated form to produce its peculiar effects upon the skin cannot be exactly stated, but it must vary with the degree of individual susceptibility. I have been assured by persons well acquainted with the plant, and so easily acted upon as to have been repeatedly poisoned by it, that they have been affected by driving along a narrow road, the stone-walls on either side of which were covered with the flowering vines of *Rhus toxicodendron*. Many persons who carefully shun contact with it are frequently poisoned when they approach it even. That very slight contact is sufficient to produce very severe action upon the skin at times is certain. The only measure of the extent of its power can be learned by experience alone; some persons being entirely unaffected by ordinary handling of specimens, who are yet susceptible in some degree to its action in a concentrated form. My own case, and the experiments of Prof. Maisch, above quoted, illustrate this.

The two species differ only in the degree of their action—*Rhus venenata,* the tree, being much more powerful than the creeping *R .toxicodendron*—and many persons are able to handle the latter with impunity, who are readily poisoned by contact with the former. It is evident, then, that cases of poisoning would be much more frequent and severe were poison-sumach of as common occurrence about dwellings as the poison-ivy, for the majority of persons are, no doubt, unaffected by the latter.

With regard to the influence of season upon the virulence of the poison, there is an impression that it is most active in the flowering-season, and the emanations at such times may be especially so, while the skin on hot days, and when perspiring, may be most ready to absorb it. This may be correct; it is, however, sufficiently powerful at all seasons. At least, one-half the cases I have seen occurred in the fall, after the change in the foliage, and in persons who, collecting autumn leaves, had been attracted by the gorgeous coloring both species then exhibit. No leaves approach in variety and brilliancy of tints those of *Rhus venenata.* But later still in the season the venomous properties of these plants manifest themselves. In winter even, cases of poisoning occur, and are no doubt sometimes unrecognized. In the case of the young lady, quoted in illustration of the severer form of poisoning, one of the attacks, it will be remembered, was caused by handling twigs and dried foliage of *Rhus toxicodendron* at Christmas-time. Other cases might be reported at length, but it will be enough for the purpose simply to mention them.

Some years ago, in December, I was called to a gentleman who had a severe attack upon his hands, who had handled some of the branches while chopping wood.

Last February, I treated a gentleman for quite a severe attack upon the hands, who handled wood entwined by poison-ivy out-of-doors, and whose farmer at the same time was very badly poisoned while chopping the same wood.

Dr. Bigelow states, in his "Medical Botany," that he has known persons to be poisoned in the winter, when the wood of *Rhus venenata* was burned upon the fire. Whether in these cases the poisoning was produced by the exhalations of the burning wood or by contact while handling it by the fireside, he cannot positively say.

I was curious to know how long dried specimens in the herbarium might retain their poisonous properties, and, for this purpose, wrote to Prof. Gray, who very kindly replies as follows:

"BOTANIC GARDEN, CAMBRIDGE, MASS.,
October 21, 1872.

"DEAR DOCTOR: My personal knowledge that rhus dried specimens are harmless amounts merely to this: I handle over and over dried specimens with impunity, but am very sensitive to the fresh plant. Then the poison is volatile, as shown by its affecting persons who do not touch it actually; that of the leaves, I should say, must escape and dry out in the drying process, or in the course of time. In a stem it would not volatilize so soon, but I should not expect to be poisoned from any *old* herbarium specimen, either from twigs or leaves . . . "

Thus not only the leaves, but the wood and bark, contain the virulent principle at all seasons, and the fruit also possesses poisonous properties when swallowed.

The time required for the development of the visible manifestations of the poison upon the skin, after contact with the plant or its emanations, or its period of apparent latency, seems to vary greatly. In his "Genera," Gray says, "The symptoms begin several hours after exposure." Dr. Bigelow, in his remarks on *R. venenata*, says, "The effects show themselves upon the skin generally within eight hours." My own observations do not agree with these as to the rapidity of its action. In my own case, above recorded, at least forty-eight hours passed before any thing was felt or seen upon the parts to which *R. venenata* was applied. It may be properly suggested, in explanation of such delay, that my skin is not easily acted upon by the poison. This is true, but my other observations concern patients, that is, persons especially susceptible to its action, and I find on reference to my record-book that three days, four days, and five days, are repeatedly given by them as the interval between contact and the appearance of an eruption sufficiently marked to attract their attention. Such length of interval seems to be the rule rather than the exception in my experience, although this, of course, does not invalidate the correctness of their statements that, under some circumstances, a few hours may be sufficient for the development of the eruption. That new efflorescences may continue to appear, after the first manifestations, for a much longer period, we have already seen.

But how shall we explain some of the peculiar phenomena connected with the action of this poison, as recorded in my own case, for instance? The first vesicle appeared on the second day following that of contact with the juice. From that time for twenty-two days these characteristic efflorescences continued to be occasionally developed, singly toward the last, and on parts of the hands more or less remote from one another. Where had the active principle, which on November 3d gave rise to the solitary vesicle on my left thumb at a distance of two inches from the single and only other eruption on that member, been since the contact on October 10th? Had it been originally absorbed at that particular point, and been lying dormant for three weeks before sufficiently impressing the tissues to recognize its presence by such excessive vitality of action; or was the poison borne thither at that late period from some other focus of activity; or had the spot been freshly poisoned by contact with parts similarly affected? Strange as it may seem, the first of the three suppositions is the least improbable, and must, therefore, for want of better explanation, be accepted as the solution of this mysterious action.

With regard to the latter point, that of *contagion*, a definite opinion may be expressed. The question is often asked, "Is ivy-poisoning contagious? Will contact with the eruption, or the fluid discharges, produce the disease upon other parts of the same person or upon the skin of another individual?" It is not at all improbable that a person who had been handling specimens of rhus might, by immediately taking the hand of a person excessively sensitive to its action, and before the volatile principle had been dissipated, or washed away, or absorbed, convey the poison thus to the other, which would subsequently prove effective. That would be transferring the poison, not the disease. Prof. Maisch shows the possibility of such an event in the account of his experiments. It is in this way that the penis is so often affected, no doubt, it being handled during micturition while out-of-doors, and while the poison is still fresh upon the hands. There are no grounds for believing that, the poison once absorbed, or removed by washing or volatilization, the disease is in any way contagious. The freest handling of parts affected in all stages of the efflorescence fails to transfer the disease to the hands of another, and I believe surface contact with other parts of the same individual entirely ineffectual in spreading the eruption. To determine the possibility of such communication, I undertook the following experiment in connection with my own case: On October 14th, both the vesicles upon my wrist, the one of twenty-four, the other of eight hours' duration, were opened, and their clear and colorless contents applied and scratched into the epidermis on the wrist of a gentleman who is especially sensitive to the poison of *Rhus toxicodendron*, having suffered twice during the present summer, and many times and severely in past seasons, from contact with it. The result was wholly negative. Dr. Bigelow reports that Dr. Pierson inoculated with the serum from vesicles on the second day in the case above referred to, and with the discharge from the later stage, but without effect.

On Animals.—I have been unable to find a single instance on record of the poisonous action of rhus on the lower animals. I have inquired of a great number of sportsmen with regard to their dogs, and published in the *Spirit of the Times*, through the courtesy of its editor, a similar inquiry. There seems to be no reason why short-haired pointers, considering the necessarily frequent contact with poison-ivy while hunting, should not sometimes exhibit the effects of its action, if their skins were at all susceptible. One gentleman, a physician, told me that his dog's eyes had been closed by swelling once or twice while hunting where ivy abounded, which he attributed to its action, but he had never seen any eruption upon the skin at the time.

The leaves of both species are found eaten by worms, and spiders attach their webs to them. Dr. Bigelow, on the other hand, refers to an account, in the *New York Medical Repository*, of a swarm of bees alighting on the branches of *Rhus venenata.* The next day they were found dead, their bodies being black and swollen. He adds that in spring their flowers are sought by numerous insects. On the other hand, I find it stated that insects never attack the Japan tree.

Treatment.—A great many remedies have been recommended, in both medical and botanical books, for the treatment of persons poisoned by rhus, while others of a "domestic" character are used in various parts of the country. Among the former a solution of acetate of lead holds the most conspicuous place. Torrey, in his "Botany of New York," says one of the best applications is a solution of sugar of lead, after the use of saline cathartics. Dr. Bigelow ("Medical Botany") thinks the application of acetate of lead as useful as any external palliative, and that it should be used as cold as possible. Solutions of sulphate of copper and of other metallic salts have also been recommended by physicians. Among the domestic remedies, vinegar, and solutions of saleratus, and carbonate of soda, are widely and highly esteemed. A decoction of Virginia snakeroot (*serpentaria*) is also supposed to possess special power against the poison. In an old copy of Bigelow's "Florula Bostoniensis," picked up in a second-hand book-store, I find, in connection with *Rhus toxicodendron*, a marginal note by its former owners, stating that, if soft-soap be rubbed thoroughly into the hands after handling specimens, its poisonous action will be prevented.

It is evident from our knowledge of the nature of the poison and its effects, as above described, that two distinct questions are to be considered in connection with the treatment of rhus-poisoning, as in toxicological therapeutics generally, first, that of the necessity and selection of an antidote; second, that of the proper management of the changes in the tissues of the skin. So far as I know, these have never been sufficiently recognized by writers and practitioners, perhaps because we were so long ignorant of the true chemical nature of the poison; and the reputation which some of the above-mentioned remedies have, perhaps, justly acquired, rests upon their successful action in one or the other of these directions, according to the period in which they may have been used.

Whether or not we should resort to an antidote must, of course, be determined by the length of time since the parts affected were in contact with the plant, or its exhalations. As the poisonous principle is of a volatile character, it is questionable how much good can be done in this direction after the first day, or even then after the hands have been washed with simple water. How long the poison may retain its characteristic peculiarities after absorption by the skin, and how readily our antidote may follow and penetrate to it, are also matters of uncertainty. As to the nature of the remedies to be used at this stage and for this purpose, there can be, of course, no longer any question. We have to deal with an acid, and the antidote for an acid is an alkali—that is, provided the salts thus formed are not equally poisonous. In poisoning by oxalic acid, for instance, potash is not an antidote, because the combination formed is nearly as poisonous as the acid itself Whether the salts formed with toxicodendric acid by ammonia, potash, and soda, are likewise poisonous, Prof. Maisch leaves us somewhat in doubt as the result of experiment, but speaking clinically he leads us to believe they are not, for, he says that the application of solutions of ammonia seemed to be most effective in counteracting the action of the acid. This is consistent with the popular reputation of solutions of saleratus and soda as remedies, and will explain the action of the soft-soap above mentioned. These are true antidotes, but they can be of benefit only from their chemical action, and in this way. In the later stages, or, in other words, against the subsequent eczematous changes in the cutaneous tissues, they can do no good. The action of that most popular of all remedies in this affection, the solution of sugar of lead, is a mixed one, and seems to have been happily, though unwittingly, selected as an appropriate remedy in all stages. Toxicodendric acid precipitates from it an insoluble, and therefore harmless, salt, while its astringent action is well adapted, in many cases, to the relief of the inflammatory processes in the skin.

The treatment of the later stages of rhus-poisoning, that is, of the eruption it produces, need not be especially considered, for it is mainly that of the corresponding varieties of ordinary acute eczema. It is seldom that the physician is called upon before the inflammatory process is well developed, so that there generally remains for him only the selection of the applications appropriate to a simple eczema of the same stage. In the great majority of cases I have found black-wash—calomel ʒj, lime-water Oj—by far the best application to the affected parts, used as an evaporating lotion upon thin and old linen or cotton cloth, for half an hour to one hour at a time, two or three times a day. I have used in connection with it, to moist or excoriated parts, a powder of oxide of zinc ʒj, starch ℥j, or plasters of oxide of zinc or diachylon-ointment, as in the management of ordinary eczema. In the black-wash we have, possibly, three elements at work in our favor: first, the alkali as antidote, if it is of any avail at such periods; second, the action of cold from evaporation upon the local hyperamy; and, third, the astringent effect of the mercurial powder upon the diseased tissues. In all cases of poisoning I have been entirely satisfied with its effects, however extensive in distribution or advanced in development the inflammatory condition of the skin. Only upon the thickened epidermal coverings of the efflorescences in the palms does it seem ineffectual. To these tardy and well-protected manifestations I apply solutions of corrosive sublimate, from one to two grains to the ounce of water, in the same way as the black-wash is used upon the other parts. By these means the eczematous process is checked and shortened, and the subjective symptoms greatly alleviated.

Of any internal treatment of direct bearing upon the affection, I have never seen the operation or need. A simple and restricted diet in severe cases is, of course, to be observed.

Art. II.—*The Logic of Medicine.*[1] By Edward S. Dunster, M. D., Professor of Obstetrics and the Diseases of Children in the Long Island College Hospital, etc.

The twenty-five years which have elapsed since the organization of this Academy suggest a thought which it may not be unprofitable to pursue. They are years which have been characterized on the one hand by marvellous advances in the arts and sciences, and on the other by a freedom of thought so active, so bold, so iconoclastic, as to have brought constantly upon this day and generation the charges of infidelity, skepticism, and even graver forms of unbelief. On the first of these contrasting features we need not at this point of the argument dwell. The evidences of advance, seen on every side, are familiar to you all. Even narrowing the inquiry to our own profession, a simple description of the many improvements that have been made in medicine would claim a large share of the time at our disposal. These improvements have not merely left a good impress upon our science, but they have given to it a material and positive advance; they have been incorporated into our art, and have become necessities in our practice; they are, as Dr. Acland says, the alphabet of modern medicine in its every-day work.

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[1] Address delivered on the occasion of the Twenty-fifth Anniversary of the New York Academy of Medicine, December 30, 1872.

The other of the contrasted features of this recent period can be dismissed in an equally summary manner, as a discussion of it is not pertinent to the inquiry in hand, and yet in itself it is a subject of the most attractive interest, and well worth the closest study, if we have, as we ought to have, any concern for the advancement of the human race to a higher degree of social mental and moral perfection than that which now obtains. Reference is here made to it, solely because the subject of our inquiry has been suggested by the mutual relations and interdependence between these apparently-contradictory features. This active, bold, iconoclastic thought, much of it undoubtedly speculative, but more of it based on a rigid and logical induction of observed phenomena, has pervaded almost every department of knowledge; it has changed entirely the aspect of many of the physical and organic sciences; has shaken systems and theories which were considered immovable; has unhinged beliefs which were accepted as conclusive, and caused a distrust of others that were assumed to be equally secure; has wrought the direst confusion among the theological and metaphysical conceptions of the order and evolution of the universe, and the estimate of man's place in Nature; in short, has brought about so many antagonistic opinions, and has unloosed so much distrust and suspicion regarding every thing that finite intelligence can lay hold of, that we may with propriety ask ourselves whether the charges to which we have alluded are not well founded.

Now, in the midst of these violent upheavals of long-accepted beliefs, these attacks upon faith in the orthodoxy of science and reliance on its fixity, and with doubt and suspense on every side, the question whether there is any stability in medicine must have repeatedly forced itself upon every observant and thinking physician. Is the medicine of to-day based upon any solid foundation? Is its future assured, or is it now and must it always be a shallow empiricism, dependent for its form upon caprice and fashion, and relying for its support upon credulity and ignorance? It seems to me that a little reflection will show that the medicine of to-day is a logical outcome from its past history, its failures and successes, its incongruous mixture of truth and error, and that, measured by the same standard, its future progress, though indeterminate as to rate, is assured beyond all doubt; in other words, there is a logic in medicine which governs its evolution and measures its progress.

What this logic is, and how it can facilitate the advance of medicine, are the topics to which I invite your consideration.

At the very outset, however, let me not be understood as arraigning the past for any shortcomings or errors in the methods she has adopted in medicine, or as claiming that better plans might have been followed, or greater success attained. With the mental tendencies, the devotion to the scholastic philosophies, the amount of learning and the degree of civilization which then prevailed, it was simply impossible that any condition of things could have obtained in medicine different from that which history discloses. The assertion, therefore, of the determining influence of logic in the evolution of medicine is made in no spirit of reproach or of arrogance, but simply that, by illustrating the causes which hitherto have delayed progress, we may avail ourselves of the lesson thereby conveyed, and avoid similar errors. The present advanced position of medicine clearly enables and authorizes the pointing out of such errors; and, while we hold them up to view as a means of wholesome discipline, it may be well not to forget that our successors, in their turn, may demonstrate in us errors and absurdities as marked and offensive as those we now recognize among our ancestors. A decent regard, therefore, for our own reputations would suggest a becoming modesty rather than a too confident assurance in estimating the position of the science and art of modern medicine.

I say science and art, because the two, though inseparably connected, are quite different and by no means parallel or synchronous in their development. This distinction is essential and preliminary to the main question, and must be clearly kept in mind. Thus it is evident that medicine, taking its origin in an instinctive desire on man's part to relieve himself or his fellows, when suffering from disease or injury, must have existed from all time, or rather must have been coeval with man. For this purpose, he selected and applied such agents, or adopted such remedial measures, as experience or tradition had shown to be serviceable. All this, however, was the art alone, and of a very crude nature at that. Science was not brought to bear, for there was none existent, as such, at those remote periods, nor could there be any until methodical research and investigation had determined the laws of science. Thus, as a matter of fact, art, not alone in medicine, but in all other departments of knowledge, has usually preceded science, though logically science is the basis of all art, and should antedate it.[1]

But the physician who is brought face to face with emergencies demanding prompt measures to avert distress or death, cannot wait for science to establish her conclusions, and furnish him with data which shall be a reliable guide to him in action. In so far, therefore, as art relies wholly on empircism or acts upon probabilities, she is both in advance of and at variance with pure science, which admits no uncertain element in her procedures. On the other hand, science comes constantly to the front of art and points out her mistakes, and furnishes her with methods of correct investigation, with instruments of precision, with agents of defined potency, and with innumerable aids and means of exact and ascertained value. In this sense, then, science is constantly in advance of art, and it may avoid much confusion of thought if the distinction be not lost sight of.

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[1] "Medicine as an art cannot always go hand in hand with medicine as a science. The physician, with emergencies constantly before him, cannot wait till science has established her conclusions with absolute certainty. In so far as medicine is purely scientific, it is not in harmony with the average mind of mankind; in so far as it is empirical, it is at variance with pure science. Science being organized knowledge, and admitting no uncertain element, objects to the probabilities which guide the master of the art to his conclusions, and lead him to act with a promptitude incomprehensible and appalling to the uninitiated. . . . In so far as he does this, he abandons the order observed in pure science. Still he must do so in many cases if he is to act at all. If he cannot do so, he is apt to become first skeptical, then indifferent."—Dr. H. W. Acland, *Address before the British Medical Association in* 1868. *Printed in* "*Medicine in Modern Times*," *London*, 1869, p. 19.

But to return. By the term logic is here understood, of course, not the *pure* logic of the schools, which is concerned only with the laws of the form of thought, but *applied* logic, which has reference to the matter, or facts, or truths, of the objects and phenomena to which thought is directed. In this sense, then, the logic of medicine acquaints us with the processes by which the mind arrives at that appreciation of the facts and phenomena with which the physician has to deal, which constitutes empirical or experimental truth. Its office, therefore, is not to disclose truth, or fact, or doctrine, in medicine, but to acquaint us with the real value of the ways and means by which such disclosures are attained; to enable us to judge whether our investigation has been conducted by proper methods; to warn us of error or fallacy, and to furnish us with data whereby to test the correctness of our conclusions. It is a logic which is equally applicable to all the so-called experimental sciences, and which in many of them, by reason of the greater simplicity of the conditions under which phenomena are observed, has resulted in such a comprehensive and precise acquaintance with the laws which govern those phenomena.

Now, the principal though not exclusive means by which, in the physical sciences, we arrive at truth, consist in observation, experiment, and comparison, with inferences from the knowledge so gained as to the causal connection or the so-called "laws," affecting the phenomena or processes under investigation. This constitutes the inductive method first distinctly formulated by Bacon, though called by him the "interrogation and interpretation of Nature." It differs from the deductive method of reasoning by proceeding from effects to causes, while the latter proceeds from causes to effects. The inductive method starts with facts, the deductive with ideas. Both methods involve a process of reasoning which is the same, however, in each, and, like all reasoning, may be reduced to the form of syllogisms. In both the conclusions are not absolutely certain, and hence they require verification. Both are of service in the furtherance of science, though the former occupies by odds the most prominent position, and it is this method alone to which applied logic has reference. Indeed, the method itself is nothing but applied or material logic.

We may dismiss, then, the deductive method from further consideration, with a full acknowledgment of the valuable services it has rendered, for it has given us some of the most brilliant discoveries that have been made in science, and without doubt, when properly employed, it will continue to be of equal value. But logic equally well prescribes the modes and limits the application of this method; and, when the ideas with which it starts are based, as they should be, upon established facts, not upon mere assumptions that have no relation to fact, we have already made an important move toward the method of induction.

Observation, of course, is the beginning of all knowledge, the basis of all intelligent action. Logic does not teach us how to observe; this is a matter of training and education. But it does teach that observation to be of value must be exact, that we must observe things as they really exist, and must not allow any preconceived notions or habits of thought, or respect for authority, to interfere and prevent our seeing things just as they are. It therefore throws around this first effort in the search for knowledge every possible precaution, and brings to its aid the appliances of science, which are infinitely more precise than the unaided senses. It supplements simple observation by experiment, which in truth is of greater value than observation alone and in some departments of science has become the almost exclusive means of interrogating Nature, for it enables us to avoid many sources of error by bringing phenomena into observance under simpler conditions, and thus stripping them of complications which so interfere with the correct appreciation of fact; and, finally, just to the degree that experiment is conducted in accordance with the remorseless accuracy of science, it becomes at once a test of the precision of our observation and the soundness of our conclusions. Experiment, too, has extended observation to the study of the functions of the internal organs of the body, which never could have been learned by observation from without, and thus has given us an acquaintance both with the healthy and unhealthy processes manifested in life.

But observation in itself merely gathers materials, simply enables us to say—of a disease, for instance—that it exists in a certain form. It teaches us nothing of the causes or relations of phenomena, nothing of the conditions they are subject to, nothing of the objects they in turn may modify, nothing, in short, of the exact nature of the processes under observation, and unless founded on exact knowledge, observation and experience are of little avail. Medicine without such knowledge as this must have remained just where it was brought by the Alexandrian school of empirics, who, denying the validity of reasoning in medicine, and renouncing all search into the causes or nature of disease, and abandoning the study of alteration in the structure and functions of the body, declared that it was only necessary to observe external phenomena, and find out, by experience alone, what drugs were useful in relieving symptoms. Their illogical error was in stopping short of the complete induction. When, therefore, their predecessors and opponents the dogmatists insisted that such studies and such knowledge were prerequisites for the physician, they were, logically speaking, one degree in advance of the empirics. But, when they claimed that reason alone was adequate to supply all the deficiencies in their knowledge, and enable them to rightly understand what they were dealing with, they ran directly counter to the logical method of induction which their professed leader Hippocrates had in reality adopted, though he never formulated it. They, however, when they had erected themselves into a distinct school, had widely departed from his teachings and methods. On the other hand, for the empirics it should be said that they reduced observation to a method which is fundamentally that of a perfect induction, and thus rendered a far more important service to medicine than had all the speculations and hypotheses of the dogmatists. No wonder, then, that, when the reactionary period against the philosophy of the time, which was inaugurated by the skepticism of Pyrrho, had fairly developed itself, the empirics easily distanced their antagonists and remained for centuries almost the sole masters of medicine.

Inasmuch as the knowledge gained by observation and experiment is inadequate to the final result, we make another advance in the step of comparison. Logic brings in as auxiliaries here, classifications, analogies, and statistics, and shows their true value and uses, the extent to which they may be carried, and the validity of the deductions that may be made from them. It further guards against inaccuracy by declaring that the facts compared must be of the same kind, as nearly identical as may be possible in the nature of things; by showing that they must be brought together in sufficient numbers to correct errors of individual observation, to determine what has uniformly occurred either as antecedent or resultant, to distinguish between constant and accidental sequences and coincidences, and to pick out by exclusion the efficient cause, or causes, where, as is continually the case in so complex a structure as the human body, many are acting at the same time.

It is just here, we may remark in passing, that the slip is so constantly made in all systems of therapeutics in determining the remedial value of medicine. If patients, suffering from certain diseases, recover as well and as promptly, under given conditions and surroundings, without medication as with it, then assuredly any medicine that may have been administered is not an efficient cause in the recovery. If, again, in patients under identical conditions and surroundings, certain diseases, without medication, have a constant tendency to grow worse, and with medication a constant tendency to grow better, then it is equally apparent that the medicine is an efficient cause in the recovery, and by similar comparisons, on changing the conditions and surroundings (such, for instance, as rest, warmth, food, light, air, etc.), we can determine whether they have any influence in promoting recovery, or, in other words, whether they are to be included among the efficient causes. It is a compliance with this single requirement of logic which has swept away so much of the merciless therapeutics of the past. It is a non-compliance with this same demand that is keeping alive, to-day, a faith in those attenuated shadows of substance that are represented in Hahnemannic dilutions and triturations.

Furthermore, all through these methods, logic indicates numerous fallacies and sources of error, of which only the most important can here be mentioned. It forbids all ambiguity in the terminology, definitions, and descriptions employed in medicine, and demands that such technical language must represent actualities, and must not include any misstatement of fact; must be devoid of surmise, and must not be a cover for our own ignorance. The medical nomenclature, even of to-day, is in open disregard of this rule of logic, and it is no easy matter to correct it. It has come down as a legacy from former generations, when the terms were devised in accordance with the best information then extant; and, although subsequent knowledge has shown the incorrectness of very many of such terms, they have become so incorporated into our modes of speech that we cannot now escape them. The mischief accruing therefrom is almost incalculable, as it is wellnigh impossible to secure any thing like precision of thought, or an accurate habit of expression, by the employment of a terminology that is notoriously ambiguous, incorrect, and unsatisfactory. Centuries have been required in the formation of our technical language, and it will require centuries more to remove the disabilities that have thus been imposed upon us. But logic shows us the way out of the difficulty, and imperiously demands that we avoid it in any additions that may hereafter be made in our medical nomenclature.

Again, logic shuts out all tautology, reasoning in a circle, and *petitio principii*—usages that only serve the purpose of throwing intellectual dust in the eyes of those less informed than ourselves, that do not add to the stock of knowledge, and that indicate nothing but a facile and magisterial verbosity. It shows us that errors of judgment may creep in, either directly from incorrect observation, or by omitting essentials in the process of observation, or indirectly from a deference to authority, from the influences of fashion, from the mental tendencies of the age, which are many times only reflections from the prevailing systems of philosophy or of religion, from the results of special education, which often induces a one-sided and narrowly limited direction of thought. It cautions against the hasty acceptance of novelties, but, at the same time, admonishes that such innovations are not to be rejected without adequate cause, without a rigorous examination of their values. It puts us on guard against the theories and teachings which are dictated by personal interests, or by enthusiasm unsupported by adequate knowledge. It does not exclude theory and hypothesis, for without them we could scarcely form any idea of the processes or phenomena in the living body, of the state of a patient, or of the action of medicines; but it most emphatically declares that such theories must be taken for no more than they are really worth, that, until verified, they must not be accepted as established truths and facts. It therefore receives them only as tentative propositions, which may suffice for the present to explain, in some manner, occurrences previously inexplicable, but must be held subject to revision by the light of increasing knowledge, and whenever employed must be entirely subordinate to observed facts.

But the one great overshadowing error which logic would have us beware of is, so to speak, the projection of self or *ego* into the mental processes which we employ in the search after truth. It interferes with observation, gives erroneous interpretations to experiments, renders comparisons futile, obscures judgment, and blinds reason. It is, indeed, at the bottom of many of the fallacies just noted. It is found in the superstitions, the mysticism, and vain conceits, of the early and middle ages; it is seen in wellnigh all the special theories which in times past have tried the tempers of our ancestors, or in the present remain to block the wheels of progress. It is further manifested in the conceptions of life and disease, which from all antiquity have so bewildered the mind of man. It is the source of the danger in reasoning to final causes which formerly was so productive of useless speculation and absurd hypotheses that it was excluded by Bacon, and the strict adherents of his method. He himself says that final causes, like the vestal virgins, are devoted to the services of the divinity, but, like them, they are unfruitful. Such reasoning, however, when guarded by all the restrictions which logic would throw around it, is admissible, for it is not strictly unphilosophical, and, in fact, in many instances has proved of signal value, especially in the department of physiology.

But this enumeration must suffice; the list is already so extended that it may serve rather to discourage than to stimulate effort in the right direction, and it is no wonder that there are so few who can advantageously use applied logic in all its details for the advancement of science. But the great compensation is that, by the natural division of labor, which is the inevitable result of differing mental tendencies in different persons, the sources of error for each may be reduced to insignificant numbers and proportions. Some excel in the department of observation, others in that of experiment; some in comparison, others in deduction. Thus, in the long-run, compensation may be had for individual errors, or they may easily be eliminated, and every one may contribute something toward advance. It was by the introduction of this logical method that medicine, since the time of Bacon, and the more general cultivation of the physical sciences, has made such wonderful strides. By the continual application of it in the future, progress may be confidently expected, and by it, moreover, will be most largely achieved.

In looking back now at the career of medicine, it is easy to see wherein error has been committed, and wherein conformity has been had to the principles which logic demands in the prosecution of any science. It is unnecessary to test by this standard all the theories and advances or retrogradations in knowledge which history narrates for us; but it may be well, by way of illustration of the principles laid down, to point out a few circumstances which, as we now see, but which our predecessors could not see, were clearly at variance with the logic of medicine, and which, therefore, were impediments to progress. The elimination of these sources of error from modern medicine, to a greater or less extent, has rendered it more positive and more scientific than that of the past, and confirms a belief in its continuous progress in the future.

And one great drawback in the past has been a slavish deference to authority. This could not, it is true, have been avoided in times when education, such as it was, was limited to a few fortunate persons whose position and surroundings enabled them to command its advantages, and it is with no spirit of fault-finding or reproval that the assertion is made, but it is none the less true for all that. It was largely due to this profound reverence for authority that medicine remained for more than fifteen centuries in a state of complete stagnation, and in some particulars of actual retrogradation. Sir Thomas Browne,[1] in his quaint way, says: "But the mortallest enemy unto knowledge, and that which hath done the greatest execution upon truth, hath been a peremptory adhesion unto authority." It was precisely this which sustained that reliance in the infallibility of Aristotle, Hippocrates, and Galen, which at the present time seems so misplaced; which even prevented men from seeing things as they were, or daring to judge of facts by their own senses; which caused anatomists, for instance, to believe in the existence of openings between the ventricles of the heart because Galen had asserted their existence, and, even when no such openings could be seen, made them resort to the supposition of invisible pores rather than break faith with their long-loved master, whose preposterous teachings, it has been said, gave universal laws in medicine to Europe, Africa, and part of Asia, for more than thirteen centuries, and with whom even learned professors said they would rather err than be right with other physicians.

We cannot, therefore, refuse an acknowledgment of gratitude to Paracelsus, that magnificent charlatan, who struck at authority the blow whose influence is felt even down to our day, and "which shook the medical throne of Galen and Avicenna to its foundation." On assuming the chair of Medicine at Basle, in 1526, he publicly burned the works of those authors, and declared that the clasps of his shoes possessed more knowledge than these celebrated physicians.[1] He styled himself the monarch of all physicians, and asserted that his very beard had more experience than all the united academies. This stupendous effrontery was undoubtedly assumed for selfish motives, yet it accomplished a good work. He practically revolutionized medicine by bringing the laws of chemistry and physics to bear in the investigation of disease, and he did more than any other one man to free it from the bondage of authority. And yet, by his absurd pretensions, his unparalleled insolence and audacity, and his shameless life, he wellnigh undid all the good he had wrought, and, claiming to possess the secret of life, he died at an early age, from the results of his own infamous vices.

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[1] Works, edited by Wilkins. Vol. ii., p. 214. London, 1846.

Thus it was that, with the dawn of Protestantism in the beginning of the sixteenth century, there was ushered in a spirit of free inquiry which soon brought about a more healthy state of opinion, and which, coupled with the diffusion of knowledge, has at last made it wellnigh impossible for men to stand spell-bound at the assertions of authority. And so to-day, in a far more logical and philosophical spirit, when a Cohnheim, following up the track of Waller's original observations, asserts the passage of the white corpuscles bodily through the walls of the minute blood-vessels, we neither affirm nor deny the apparent paradox, but, with the true spirit of the logic of medicine, hundreds of microscopes are at once brought to bear on inflamed tissue, to test the truth or falsity of the assertion, while the theory which is based on the fact is held in abeyance until further experiment and comparison shall have fulfilled all the requirements of logic, before accepting the theory as established truth. And so, again, when Liebreich, by a process of purely logical deduction, suggests that an article hitherto known only as a chemical curiosity may become a serviceable medicinal agent, and boldly puts it to the test of administration, we applaud his scientific spirit of inquiry, but, still reserving to ourselves the logical right of search, thousands of human stomachs, the world over, are at once impressed into service, and straightway there is added to the *materia medica* a remedy of great potency and of unquestioned value.

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[1] "*Audacter enim profiteor, quad lanugo occipitii mei multo plura sciat quam scriptores vestri universi. Quin et calceorum meorum annuli doctiores sunt ipsissimo vestro Galeno vel Avicenna. Et barba mea experientiæ majoris est, quam Academiæ vestræ universæ.*"—A. P. T. PARACELSI BOMBAST. AB HOHENHEIM, Opera Omnia, vol. i., p. 186. Geneva, 1658. From the preface to the tract entitled *Paragranum.*

Pettigrew, in his "Medical Superstitions," gives this quotation, apparently second-handed, in a very different form from the above. (*See* also Sir Thomas Browne's works, vol. ii., p. 229.)

Again, the introduction of metaphysical systems and beliefs into the examination and interpretation of the phenomena of life, health, and disease, with which the physician has to deal, has been another fruitful source of error, for it has encouraged false conceptions, has thwarted accurate and scientific investigation, and has been the manifold spring of confusion of thought. This confusion between correct and incorrect thought explains, and in some degree excuses, the mistrust in all theories and systems, and brings contempt upon the idea of methodical progress in the science of medicine. Its baneful influences can be observed all through the history of medicine, more marked, of course, in those days when the study of the philosophy of the schools was considered the highest and noblest use to which the human mind could be put. It can be seen in many of the now-abandoned theories which held such potent sway in the medicine of the past, for they were almost all the reflex of the prevailing systems of metaphysical philosophy. On the other hand, even in many of the positive advances in knowledge, there was mingled much of this sort of error, which has left, even to our day, a pernicious influence, and it would seem almost impossible for the mind of man to disassociate the two systems in the search after truth. In illustration of this point, look at the constantly-shifting hypotheses which have been put forward to explain the mystery of life. Going back only to Paracelsus, whose remarkable career has just been alluded to, we find in his *archæus*, or little demon that resided in the stomach, an hypothetical principle presiding over the function of digestion, and thus controlling a part, at least, of the vital phenomena. Next, Van Helmont adopted this hypothesis, but extended its sphere by placing a subordinate *archæus* in each organ, to account for the different functions of the body. Then came the *anima* of Stahl—a vital principle residing outside of matter, and controlling all the processes of life. In turn, Haller modified this view by showing that the vital forces existed only in the tissues of the body, as, viz., irritability in muscle, and sensibility in nerve. Following upon this is the modern school of vitalists, which has assumed several distinct phases of theory, and out of which has grown Brunonianism, modified later by Broussais; and finally the cellular theory of Virchow, which endows the ultimate cells with irritability, and makes the animal only a "sum of vital unities, every one of which manifests all the characteristics of life."

Now, what are all of these, disguise them as you may under learned phraseology, but metaphysical conceptions, incapable of demonstration, some of them, it is true, explaining in a manner more of the phenomena of life than others, but all of them unscientific because based on pure abstractions, and all of them involving the illogical error of attempting to explain the known by the unknown, the simple by the complex. In such attempts we only deceive ourselves, for, however frequently we may multiply these conceptions, we do not in the least increase our knowledge; and, besides, a theoretic conception, to use the words of Prof. Tyndall, without verification, is a mere figment of the intellect.

But now, perchance, the grim spectre of materialism comes looming up in the distance as the only alternative for such abstract ideas, and many a well-meaning but mistaken soul has discovered it, from afar off, in the theorem of the correlation of forces, whose sweeping generalization covers all action of which we are cognizant, and is therefore applicable to the vital actions. But, if he will only draw nigh and look calmly upon this portentous object which has so disturbed his imagination, he will see that after all it is not the hideous thing he had imagined; for, however satisfactorily the theorem may account for the mode of the actions that are manifested in life, it does not and cannot explain the origin and nature of life itself; it brings us no nearer to that first cause, "which," says Newton, "is certainly not mechanical;" it may tell us *how*, it can never tell us *why*. We ought rather, therefore, in closer accord with the spirit of the logic of medicine, to abandon such inquiries, and, in the words of Oersterlen, to concentrate all our energies in the effort "to discover not the reasons but the mode, not the essential and ultimate causes which lie far beyond our reach, but rather the manner in which our phenomena and processes commence and run their course and all the circumstances under which they constantly occur."

Another allied error is seen in the conceptions of the causes and nature of disease which have obtained from antiquity down to this very day, and herein there is found an unending source of mischief, for the reason that the prevailing systems of therapeutics have been framed in accordance with the existing theories of the nature of disease. Thus passing by the absurd and crude notions, which attributed disease to supernatural causes, the anger of the gods, the malign influence of the stars, etc., we can trace in almost every prominent theory the idea that disease is something added to the body, and which is accordingly to be removed. Thus, at one time, it is an excess in some of the humors of the body; at another, morbid or chemical or mechanical forces overcoming or acting in opposition to the healthy forces of the body. Again, it is an effort of Nature to expel some noxious material, and now it is a morbid deposit which by its presence sets up some disturbance of the system. Happily these ontological conceptions of the nature of disease are passing away, and the whole tendency of modern medicine is to take essentially the opposite view, that disease, under all its manifestations, is only a perverted healthy process—something less, as it were, than life—and out of this comes the prevailing system of therapeutics known as the restorative method. It implies, first, a scientific recognition and examination of healthy phenomena (physiology); and next an equally rigid inquiry into unhealthy phenomena (pathology); and, finally, in determining the therapeutical indications, it does away with much of that vain search after specifics which has so hindered the progress of medicine.

This diminishing belief in specifics is more apparent as we come down from the limited professional knowledge of the past, to the greater of our own time, and everywhere it may be said to be in proportion to the ignorance of the people; and accordingly, with the best-informed physicians of to-day the question is not, What drugs shall I prescribe? but, Shall there be any treatment beyond rest, and an appropriate regimen? and, if his knowledge tells him that these last are sufficient for the case in hand, he courageously withholds all medication. And, now, when some ill-informed person flings back that ugly word skepticism to indicate his estimate of what, with a show of learning, he will probably style, in the well-worn phrase of Asclepiades, "a meditation upon death," the reply is ready, that a knowledge which can dictate such a management of a case has in it not a single element of doubt, and is therefore as far as possible removed from skepticism. It is vastly more positive and more serviceable than mere faith in the efficacy of drugs without knowledge, "which in medicine," says Sir William Jenner,"[1] is the worst form of skepticism, inasmuch as it is doubt of truth and belief in error—doubt, which may prevent the saving of life, and belief which, embodied in practice, may kill."

Of course, credulity and superstition have been, and always will be, powerful influences in upholding and spreading error; and, inasmuch as they are usually proportioned to the ignorance of the masses, the logic of medicine is powerless in a measure to prevent their spread. The bulk of the world is but little better informed than of old, and the amount of pure, unadulterated stupidity in existence is appalling and seemingly illimitable; and though one special crop of foolish beliefs may be blighted, another will spring up, for the soil remains pretty much as it was before, and credulity and superstition are not indigenous to any particular country. Hence we may confidently expect a recurrence of this sort of error. It should, however, be said that not alone the ignorant and uneducated, but better men, have shared in, and been, in a large degree, responsible for the promulgation of error arising out of such sources; for "credulity," says Sir Thomas Browne,[2] "though a weakness of the intellect and most discoverable in vulgar heads, yet hath it sometimes fallen upon wiser brains and great advancers of truth." But the stronghold and hope for the future in medicine are based upon the conviction that the profession, being fortified and imbued with the methods and temper of modern science, will be able to explain such errors, and will not, therefore, lend their authority to the spread of them.

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[1] "The Practical Medicine of To-day." An Address delivered before the British Medical Association, July 28, 1869, p. 5. London, 1869.

[2] *Loc. cit.*, vol. ii., p. 208.

A good illustration of the combined influence of credulity and superstition is noticeable in the doctrine of signatures—a system of therapeutics which was wholly disconnected with any of the theories of the nature of disease to which we have previously referred. It was an attractive idea, and almost finds some extenuation in the simple piety that underlaid its adoption. As man was the lord of creation, all things were made for him, and God had therefore impressed upon every object in Nature a signature indicating its beneficent qualities by characters that showed its resemblance to a disease, or to the part of the body subject to disease. But this interweaving of theological ideas and beliefs with scientific thought and methods is wholly misplaced, and in every age has been productive of great mischief.[1] The error in it is fundamentally of the same nature as that to which we have alluded, in speaking of the fallacy of metaphysical reasoning as applied to medicine, i. e., the error of self or *ego*. Independently of this error, however, the doctrine of signatures was hopelessly unscientific and illogical in that it applied the shape or color of a plant to its medicinal properties, circumstances that are entirely dissimilar, and therefore by the rules of our logic incomparable, and yet this belief exercised a commanding influence in the practice of medicine for centuries, and traces of it remain well outlined in our modern nomenclature.

These considerations must suffice to show the manner of error in times past. It were an easy task to extend the list, but for this there is no necessity, for even these illustrations have been adduced merely to serve as a warning against committing similar infractions of the canons of medical logic in the future. They could not have been avoided, as has been seen, in the then existing state of knowledge, and we ourselves have by no means so nearly reached the infallible as to justify us in a censure of the past. So long as science and art are advancing, each successive epoch therein may be considered as in a measure provisional and subject to modification, or possibly even to entire displacement by new discoveries and advances; and therefore we have no assurance that, centuries hence, our successors may not look upon us somewhat as we now look upon our predecessors of centuries past.

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[1] Another illustration of this point is found in the notion which prevails among certain peoples that, as diseases are sent by God, it is wrong to interfere with them, either to prevent or cure. The recent (1870–'71) serious epidemic of small-pox in London disclosed the existence of quite a considerable sect of these believers, some of whom were speedily brought to their senses by the sharp discipline of the law, for refusing vaccination.

This thought, however, suggests a measure of the science and art of the medicine of to-day by the standard of the past: and, first, in point of actual knowledge, we are immensely in advance of any preceding epoch; and, second, we have the assurance of greater certainty in our methods and results. But here the objection will at once force itself: if we make a concession like that just granted, how do we know that we are really nearer the truth than was Hippocrates, or Galen, or Boerhaave, or Sydenham? how can we be sure that our present ideas and theories are a whit more reliable than those which have been abandoned as inadequate and unsatisfactory? The answer is, that with them we can explain a larger number of conditions than could any of the now-abandoned conceptions, and we have arrived at them by generalization from a larger number of observed phenomena, and under a greater variety of relations—two inexorable requirements of our logic—and, therefore, we are approximately nearer the truth, even if still greater observation and comparison should compel us to modify our present beliefs. An illustration from physical science, which is confessedly free from many sources of error that beset us in medicine, will make this answer more pointed. The Ptolemaic system of astronomy was for ages accepted as a conclusive and satisfactory explanation of the stellar and solar motions. But, as observation was extended, this system was found inadequate to explain many observed facts, and the confusion arising out of it was so great as to occasion the famous remark of Alphonso of Castile, that, if the Almighty had consulted him in the making of the universe, he could have suggested a vastly better plan than the one adopted! Then came the Copernican system, and this, advanced by the enunciation of Kepler's laws, and finally completed and affirmed by Newton's grand discovery, has at last proved adequate to explain all the observed phenomena of the motions of the universe. Yet, even this theory was for a long time beset by palpable contradictions in the results obtained from the calculations based upon it. The errors, however, have been gradually explained, and now the law is accepted as universal in its application. So in the science of medicine, as we have proceeded in the generalizations regarding biological conditions, we have cleared away numerous sources of error and confusion. Difficulties almost innumerable, however, are still outstanding and unresolved; but these, in turn, will gradually be explained, although the conditions that are at work in the body, both in health and disease, are so enormous in number and relation, and so extended in time—many of them undoubtedly acting throughout generations—that we may never arrive at the absolute results obtained in the physical sciences. But approximately these results may be reached, and, moreover, they will be reached, in proportion as we adopt scientific methods in our investigations. The methods of science are purely logical. The methods of medicine ought to be the same.

Now, as to the two features of our science and art under consideration, a sketch of the history of medicine would show that, commencing in simple empiricism, and passing through various phases of superstition, mysticism, and alchemy, it has gradually acquired the comparatively scientific, and therefore more positive, form of to-day. The period of mere belief and arbitrary speculation has passed away, and that of well-guarded investigation, of sober and more dispassionate reasoning, has taken its place. Observation has been for centuries at work accumulating materials; experiment and comparison have sifted their value into something assured. The means of investigation that have been so productive of good results in the physical sciences have been largely adopted in our own, and, what is of inestimably greater importance, we are heeding the lessons of these sciences, and striving more and more to adopt their methods, and arrive at their exactness. We have established, at least approximatively, correct empirical laws for many of the processes known to be going on in the human body, though we have not yet determined in full their relations, causal connections, and essential conditions. By reason of this increased knowledge we can, more correctly than heretofore, theorize regarding the nature and origin of many diseases, and this may be done with propriety, for logic, as has already been seen, does not exclude theory.

In support of this position, let us briefly refer to some of the more noticeable advances of recent years, and, in so doing, it will be seen that the assertion which has been so frequently yet carelessly made, that, while the science of medicine has been steadily progressing, the art has remained almost stationary, is not founded in truth. On the contrary, it seems to me that the tendency and efforts of the present day are rather to give to the art more and more the impress of science. The two are not and cannot be synchronous in their evolution, as has already been shown. If, then, we pass by anatomy, the present state of which borders closely on perfection, and if we also omit physiology and pathology, which, in reality, are but the two extremes of the same branch of science, and in which the most wonderful advances have been, and still are, going on, and confine our illustrations to clinical medicine and surgery, we shall find the special improvements so abundant as almost to be confusing in the numeration.

And, first, look at the constantly-increasing certainty in diagnosis. The microscope, the test-tube, the thermometer, and various other appliances of science, have given us an insight into disease that a century since would have been deemed simply chimerical. The distinction has been clearly drawn between diseases that were formerly considered identical, and new diseases by the same process have been added to our nosology. The various affections of the kidneys, for instance, that, only so recently as the time of Bright, were included under one term, have been accurately differentiated, and are now easily recognized at the bedside. By auscultation and percussion, the numerous diseases of the heart, lungs, and great blood-vessels, are diagnosticated with almost as much certainty as if the organs affected were exposed to sight. By the ophthalmoscope, not only is the interior of the eye laid open to view, but by it we have learned the changes which disease in distant organs induces in the cerebral circulation, and a diagnosis may thus be established, even before the grosser manifestations of such disease become evident, and furthermore an element of gravity is very early added to prognosis in affections, which otherwise might attract but little attention. The thermometer has been of material assistance, more especially in prognosis, while the limits of its usefulness are by no means as yet determined. By other ingenious contrivances, the laws of the transmission of light are made subservient to the purposes of diagnosis, and even the internal organs of the body have been reached and made to disclose their conditions. The microscope has acquainted us with the minute tissue and blood changes that indicate disease, either in its progressive or retrograde stages; and in dermatology it has made clear the nature and mode of development of very many special diseases.

All these and many other improvements are the direct results of the introduction of the methods of the physical sciences into the province of medicine, and there is some danger, perhaps, in the tendency, which of late years has been evident, to rely so largely upon an exclusively physical diagnosis. Equally important advances, however, have been made by a comparison of the results obtained in pathological investigation with the objective signs of disease. In this way the lesions of the brain and spinal cord, and all the internal organs; the mechanical origin of certain diseased states, such, viz., as follow obstructions in the circulation of the blood, as in thrombosis and embolism; the relations of local affections to constitutional states, with the important bearing thereof upon prognosis—all this and much other valuable information is now permissible, even from the clinical history alone of a patient.

Outside of diagnosis, however, the evidences of advance are not less numerous, and are of equal importance. Time, however, forbids entering into detail upon this point, and I will content myself with a simple enumeration of some of the more important of these evidences of progress. Ovariotomy, at first decried and opposed in the most virulent manner, has been recognized as a legitimate operation in surgery, and yearly it now saves hundreds of lives that, but for this mode of interference, must have soon ended. Anæsthesia has put an end to torture under the knife of the surgeon; has become a most powerful agent in the management of convulsive and painful nervous disorders, and has abolished the sufferings of parturition, although this application of its beneficent power was at first deemed impious and Heaven-defying. Hypodermic medication has given a promptness and efficacy to the action of remedies that could not be secured in any other way. The conservative influences of surgery are seen in the resection of joints and the saving of limbs that, but a few years since, were inevitably sacrificed. In the single department of urethral and cystic diseases, the surgeon of to-day has at his command means of saving life and mitigating suffering that alone are enough to place the art of to-day high above that of any preceding age. In medicine, the researches of Fox, and Sanderson, and Villemin, have thrown a flood of light upon the origin of tubercle, and have largely modified our views of the nature of phthisis. The relations of syphilis to degenerative changes and early decay are becoming well understood. A clear line of separation has been drawn between diseases proper and the processes of degeneration that are peculiar to adult and old age, and the often conservative nature of such degenerations has been distinctly proved.[1] The origin of typhoid fever has been traced to foul sewage, and the impregnations of drinking-water with fecal matter. The connection between septicæmia and impure air has been so universally demonstrated that it has become a serious question whether, in many instances, our hospitals and asylums are any thing more than agents of destruction. The bearing of soil-moisture upon the prevalence of consumption has been made an especial study in our own land, and a steady diminution in the number of cases has followed the removal of the cause. The modes of the communication of contagious diseases are ascertained, and the prevention of their spread is entirely within control, provided only that sufficient power be delegated by the State authorities.

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[1] Sir William Jenner, *loco citato*, says that, when the statement, that fatty heart is often a preservative lesion, was first made in the Pathological Society of London, only a few years ago, the assertion was received with shouts of laughter.

In prognosis and therapeutics, too, other and equally pertinent illustrations of the subject under discussion will suggest themselves to every one. But I must here cease, for assuredly, and without further proof, the assertion that the medicine of to-day is immeasurably superior to that of the past has already been made good. Oersterlen, then, was right when he said[1] that "in point of actual knowledge even a Celsus or a Hippocrates, a Boerhaave or a Sydenham, would be as matterer in comparison with any practical physician or physiologist of the present day," and let us not forget that all this is a logical outcome from the adoption of methods which have done away with many sources of error that were prevalent in former times.

Having already pointed out the manner of error that in days past has crept into medicine, and so retarded its progress, and having shown that logic is competent to detect and guard against the sources of fallacy, it was no part of my purpose to bring home the lesson to ourselves, but there is one error so palpable, so wide-spread, and so injurious, that I cannot refrain from alluding to it. I mean the illogical method of our medical education.

Volumes have been written upon this question; year after year committees of our national, State, and local associations have reported upon it; and in innumerable public addresses it has been made the subject of discussion. The remedies proposed for the correction of the evil—which is conceded on all sides—have been almost as many as the number of the persons who have engaged in the discussion. Many of the suggestions for improvement are of acknowledged value, and must sooner or later be adopted in practice, especially those which demand that the separate studies shall be taken up in their logical and progressive order, and that a knowledge of at least the rudiments of the physical sciences shall be required before entering on the medical studies proper. But the importance of logic as a means enabling the student to adopt proper methods of study and work, and to estimate the real value of what he learns, has not been sufficiently insisted upon. The very profusion with which facts, analogies, statistics, and comparisons, are laid before him, is many times only a source of bewilderment, for he does not know the proper uses to be made of them or the validity of the reasoning based upon them.

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[1] "Medical Logic. By F. Oersterlen, M. D. Translated by G. Whitely, M. D." London, 1855, p. 139.

Underlying all this there is the still more serious evil which generally dates back even to the first days of school-training, but which as a rule is either not recognized or is deliberately unheeded, of developing the sensational at the expense of the intellectual faculties, or of not keeping the two in their properly-coördinated relations. Education thus becomes a kind of a stuffing process, whose tendency is to overload the memory with ill-assorted materials rather than to develop the higher and more serviceable mental activities; and, practically, I have found in an experience now somewhat extended, that at the end of three years of study the candidate for a degree comes up for examination with his mind crowded with information, but frequently this information is so hopelessly entangled and confused as to suggest the query whether, on the whole, it would not be more judicious to learn less but to learn that much thoroughly and to a better purpose.[1] An accurate habit of thought and expression—which is one of the rarest of accomplishments—would overcome this disability on the part of the student to avail himself even of his own overplus of knowledge. This accuracy can be secured by a compliance with the very simple rules of formal logic, which, says

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[1] "The boy who studies the longest will learn the most, and a man will become wise in proportion as he reads much, are propositions which look true, but are quite untrue—as teachers are nowadays finding out in the one case, and as Hobbes, long ago, found out in the other."—HERBERT SPENCER. *On the Study of Sociology.* POPULAR SCIENCE MONTHLY, vol. i., p. 9.

Mr. J. S. Mill,[1] "is the great disperser of hazy and confused thinking; it clears up the fogs which hide from us our own ignorance, and make us believe that we understand a subject when we do not;" and, when we put our thoughts into words, it compels us to adopt definite forms of expression and distinct propositions. I trust that the day is not far distant when a training which shall have in view the acquirement of such a habit will be demanded, and when, moreover, at least enough of logic will be taught in our schools to enable the student to understand the nature of the evidence that is laid before him, and the amount, kind, and sources of proof that are required to establish a tenable proposition in medicine, and to guard against fallacy in the reasoning processes which he must of necessity employ in his daily avocation.

Turning now, for a moment, toward the future of Medicine, what shall be said of it? It needs no skill in prophecy to assure us that, so long as she clings to the methods which logic has established, her progress must be continuous, for, although much has already been accomplished, especially since she has entered upon the era of positive knowledge, or in other words has adopted scientific and logical methods in her work, there still remains an unexplored field which, properly worked, must yield results that we can now hardly dare to conceive of. From past experience to new circumstances, it is universally conceded we can only argue in accordance with an observed uniformity in the order of events. Unless such uniformity existed we could infer nothing. Now, ever since Medicine has had a history, her career, though at times retarded by error, and beset on all sides by the universal prevalence of ignorance, superstition, credulity, and false doctrines, has on the whole been steady and straightforward until it has culminated in the splendid position which she holds to-day. There need, then, be no misgivings as to the future, nor on the other hand need we reproach ourselves that the advance is not more rapid. Just to the degree that errors, such as those to which we have adverted, hold sway, will progress be hampered, but in every step taken there is some grain of truth which yet will bring forth abundant fruit. Great generalizations are arrived at only by regular and methodical approaches, not at once by complete demonstration; and each approach, while it adds directly to the existing stock of knowledge, is only paving the way for still further progress. By the logic, therefore, of the past and the present applied to the future, the inference is warrantable that a continuous evolution is the destiny as well of medicine as of other branches of science; or a little more devoutly in the words of our own distinguished orator[1] of four years since, "it is in the order of Providence that there should be a progressive advancement in medicine as in other provinces of science and art, and all that society and individuals can claim of us as medical practitioners is the exercise of our art in accordance with the existing state of science."

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[1] "Inaugural Address at the University of St. Andrew's," February 1, 1867. In this address, Mr. Mill has made an urgent and unanswerable plea for the study both of ratiocinative and inductive logic as essentials in a university education. Every consideration which he has adduced on this point will apply with equal force to a medical education.

It is an easy matter to surmise the direction in which the greatest advances will be made in the future, though the mind is dazzled in attempting to reach the degree of advance. As to the first the greatest deficiencies are, curiously enough, in the two departments of clinical medicine, which are respectively the beginning and the end of the physician's study and work, viz., etiology and therapeutics. In the intermediate departments of pathology, diagnosis, and prognosis, our knowledge, though by no means perfect, is more advanced than in either of the other two, and it is a striking illustration of the principles attempted to be shown in this paper that our information is most exact in that section where the demands of logic have been most nearly conformed to, or, to state it differently, where the laws of applied science have been made to bear upon the investigation of disease. In the first three of these divisions of clinical medicine the principal means of further advance will be found in organic chemistry and the physical sciences. In prognosis, reliance must be had on a more complete study of the natural history of disease, and happily, as I believe, for accurate knowledge and for the elimination of the so-called skepticism in medicine, this study to-day is attracting a large share of attention, and the records which we are accumulating will some day, when properly estimated by those who possess the requisite skill in generalization, prove not only a serviceable but perhaps an unerring guide for the conduct of the practitioners of our art. In therapeutics, the final and supreme stage of medicine, as Sir Thomas Watson styles it, there is the most work to be done; our only knowledge now is that of experience. We are almost in entire ignorance both of the mode of the operation of medicines and the intimate nature of the changes they produce in the system, and this cannot be otherwise so long as etiology remains in its present lamentably deficient condition. To isolate morbific principles, and to ascertain the exact nature of all disease-producing agents and to learn accurately the initial changes wrought by them, are clearly the preparatory steps to an acquaintance with the laws of the cure, not the recovery of disease. But even this knowledge is not impossible, and there can be no doubt that sooner or later the laws underlying the therapeutic action of remedies will be reached; that there are such laws it seems to me is indisputable, for law, which is not a self-acting agent, but only the expression of God's will in the workings of the universe, is present and acting everywhere and under all circumstances; and as in the past and the present so it will be in the future, that the impediments in searching out these laws will be found to lie less in the intrinsic difficulties of our subject than in the erroneous and illogical methods of conducting investigation into them. The future, then, is full of promise, and we may well content ourselves with the reflection that, as centuries upon centuries have been spent in bringing about our present advanced position, so hereafter each successive decade will give a steadily-increasing development. "The courage of patience, then," as Dr. B. W. Foster[1] beautifully remarks, "is the courage which above all is now wanted in medicine; to wait and work till in the fulness of time the simpler branches of the triad of medicine (physiology and pathology) are made ready

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[1] Prof. Austin Flint, Sr., Annual Address before the New York Academy of Medicine, 1868. NEW YORK MEDICAL JOURNAL, November, 1871.

Method and Medicine." By Balthazar W. Foster, M. D. London, 1870, p. 57.

for the evolution of its crowning science (therapeutics). In the past this courage has too often given way under a noble impatience of imperfection, and the work of ages has been destroyed by premature attempts at completion."

More than two thousand years ago Aristotle said *ubi desinit physicus ibi incipit medicus*, and essentially this assertion has held good almost down to this very day. But its significance is now lost, and the sting of its rebuke is now broken, for Medicine has allied herself to the physical sciences and is partaking of their methods and aiming at their exactness. In her evolution she has passed through the theological and metaphysical stages, where fiction, superstition, simple faith, and dogmatic opinion, were succeeded by arbitrary hypotheses, abstractions, and speculations. She has at last, though as yet scarcely across the threshold, fairly entered upon the positive stage of development, which, according to Comte, is the culmination of all human knowledge, especially in the natural sciences. And now for her furtherance in this supreme stage of evolution, renouncing again all claim for the absolute precision of the fixed sciences, and urging only as close an approximation thereto as may be possible in the nature of things, I plead for the entire abandonment of all faulty methods of investigation and reasoning, and for a still firmer alliance with those which in other quarters have produced such solid and brilliant acquisitions; for a diminishing reliance upon the "blind gropings of empiricism," and a still closer affiliation with the whole temper of modern science; for the exclusion of all fallacies and the adoption of every safeguard which can indicate a wrong direction in our labors; for the final displacement of self in the interpretation of the phenomena of life, and the concentration of all our powers in searching out and verifying the laws which govern the relation and succession of those phenomena; in a word, I plead for the incorporation into all our studies and all our work of the logic of medicine.

Art. III.—*On Strictures of the Urethra; Results of Operation with the Dilating Urethrotome, with Cases.* By F. N. Otis, M. D., Clinical Professor of Genito-urinary Diseases, College of Physicians and Surgeon, New York.

In a paper read before the Medical Journal and Library Association of the City of New York, and published in the New York Medical Journal of June, 1870, especial attention was directed to the influence of strictures invading but slightly the calibre of the urethral canal, as a cause of purulent urethral discharges. It was then claimed that "the slightest abnormal encroachment upon the calibre of the urethra, at any point in its course, is sufficient to perpetuate an existing urethral discharge, and even, under favoring conditions, to establish it, *de novo*, without venereal contact." Through an article published in the same journal, in February, 1872, this position was reënforced by the results of a further experience and study of the subject. A number of cases were then cited, where a chronic purulent urethral discharge was associated with and apparently dependent upon the presence of one or several distinct bands of stricture, and where, on account of the large calibre of the strictures, the use of the largest divulsing instruments of Messrs. Thompson, Holt & Voillemier had proved ineffectual in rupturing them. The entire incapacity of those instruments, as well as of the cutting instrument of M. Maisonneuve, was demonstrated by actual measurements which proved the divulsing capacity of the largest instrument of Mr. Thompson to be no more than 17 English, or 28 millimetres in circumference; that of Mr. Holt, as usually constructed, about the same size; that of M. Voillemier 19½ English or 32 F.; while the cutting instrument of M. Maisonneuve, with widest blade in use, did not exceed a capacity of 21 millimetres in circumference (corresponding to 11½ of the English scale); and this blade which I now show you has been objected to by eminent surgeons on account of its extreme dimensions.

Among the cases presented in proof of this alleged incapacity was one of Mr. J. G. A., in whose urethra some half a dozen bands of stricture were present, anterior to the bulb. The history of this case was as follows:

Mr. A. came under my observation November 22, 1865, having a chronic urethral discharge, following a gonorrhœa contracted a few months previous. He had been treated by the use of various injections, which failed to afford more than temporary relief. Examination revealed a decided contraction of the meatus, which was at once freely divided with Civiale's urethrotome; after which, under the use of astringent injections, the discharge soon ceased, and he had no further trouble until May 20, 1867. At this time, after an impure connection, the purulent discharge reappeared. Again treated with mild injections, and the use of a full-sized sound, the discharge ceased on the eighth day. June 29, 1868, he again presented, with a return of the discharge, which, being submitted to treatment of the same character as before, disappeared, but more slowly, only ceasing on the 22d of July. Remaining well up to June 7, 1871, he returned with same difficulty as before. Endoscopic tube No. 20 F. was passed easily down to the bulbous portion of the canal. On withdrawal, the urethra was found generally congested, presenting at several points a sensitive granular surface. Bulbous sound No. 22 F. met with slight resistance at an inch from the meatus, and a little at the sensitive points beyond. On withdrawal, the bulb was firmly held at an inch and a quarter from the meatus, when a stricture, one-fourth of an inch in breadth, was positively defined. This stricture was incised with a narrow, straight bistoury, and the granulated points were submitted to applications of a solution of nitrate of silver through the endoscope. Under this treatment the discharge diminished, but did not cease entirely, although the granulations had disappeared, and the mucous membrane was of nearly uniform color throughout the straight portion of the canal. Gradual dilatation was then made, and treatment by injections and medicated bougies, resorted to at regular intervals, combined with the internal use of cantharides and iron, and later with the oil of the yellow sandal-wood, until August 14, 1871, by which time the calibre of the urethra was brought up to No. 30 F. The 30 F. bulbous sound was then used, and by its aid a stricture one inch from the meatus was recognized (on the site of the old stricture), and passed with some difficulty. No.

28 F. bulb detected same obstruction, and, being carried on to the bulbous region, on withdrawal *five* other bands of stricture were defined: one at four and a half inches from the meatus, one at four; one at two and a half, one at two—each about a quarter of an inch in breadth—and another of nearly half an inch in breadth, at an inch and a half, and separated by but a narrow interval from the one previously operated on at one inch from the meatus. No. 30 F. conical sound was then passed down through all, immediately after which No. 28 F. bulb was again passed, which on withdrawal again positively defined all of the above-mentioned strictures. This was on August 14, 1871. I then introduced the divulsing instrument of M. Voillemier, and drove the largest shaft No. 32 F. rapidly down through all. The resistance to its passage was not sensibly greater than that previously found in passing No. 30 F. sound. After the operation and at the same sitting, No. 28 F. bulb was again introduced, and still distinctly defined all the strictured points, even No. 26 F. bulb indicated the points of contraction.

Having thus failed to rupture the strictures with the largest instrument available, and finding that the largest blade of the urethrotome of M. Maisonneuve could only reach to the calibre of No. 21 F. and the patient continuing unrelieved of his discharge, I devised an instrument for the purpose of effectually dividing the strictures, upon the presence of which I confidently believed the persistence of the discharge to depend. This instrument was presented to the profession, in an unfinished state, at a meeting of the Medical Journal and Library Association, November 24, 1871, after briefly alluding to the salient features in the case of Mr. A., just cited, as the one for the complete division of whose strictures it had been contrived. This instrument, the dilating urethrotome, manufactured in the most skilful manner by Messrs. Tiemann & Co., of New York, I have now the pleasure of presenting to this society after having tested its working capacity in the case above related and in the treatment of other strictures of large calibre.

The dilating portion of this instrument consists of a pair of straight steel bars (Fig. 2), arranged on the principle of the parallel ruler, and is capable of being expanded by means of a screw at the handle, from 23 F. (or 13 E.) to 40 F. (or 26 of the English scale), and is thus capable of making tense any stricture within those limits.

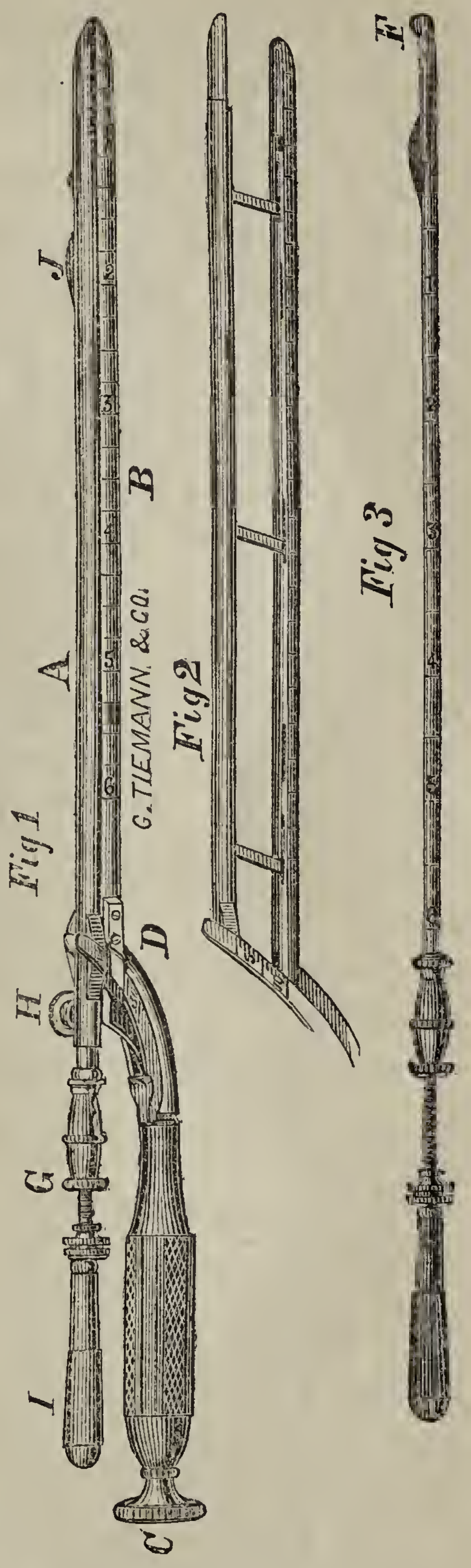


Fig. 1. Dilating urethrotome.
Fig. 2. Dilated.
Fig. 3. The canula.

The upper bar of the instrument is traversed by a canula, F, with a bulb at its extremity, which, as the canula is moved along the bar, acts as *bougie-à-boule*, and serves, when the urethra is made tense by the separation of the bars, to detect any strictured point. A groove in the canula gives passage to a steel rod which terminates in a blade half an inch in length and one and a half line in breadth. This blade, when at the extremity of the canula, is quite concealed, but on drawing back the rod, by an elevation on the floor of the groove in the canula, it is made to display the full width of the blade, at one inch from its extremity (J, Fig. 1). The bars of the instrument being expanded, and the point of stricture ascertained by means of the bulb (F, Fig. 3), the canula is moved so as to make the elevation on its floor correspond to the precise locality of the stricture; then, by a rapid movement of the handle, the blade is drawn forward, and, rising up over the ridge in the groove of the canula (J, Fig. 1), it passes through the stricture, dividing it, and then passing down is again concealed in the groove. The incision thus made divides the tense stricture-tissue by a clean cut half an inch in length. Should it become necessary to make a longer incision, the blade may be elevated to its highest point and fixed, while the *canula* is withdrawn to the extent of the incision required; the blade is then drawn down and again concealed in the groove in which it runs. In this manner an incision of any desired length may be made, and, as a rule, of sufficient depth to divide completely a stricture previously made tense and thin by the expansion of the dilating apparatus.

On the morning of the 12th of January, 1872, adapting this instrument to the calibre of Mr. A.'s strictures, and having made such tension as the patient could comfortably bear, I drew the blade of the urethrotome through the anterior stricture, one and a half inch from the meatus, cutting from behind forward, then giving the dilating screw half a turn more, I incised it from before backward, closed and withdrew the instrument. On examination of the result with the 30 F. bulb, no resistance in entrance or withdrawal could be detected at the site of the stricture. The patient averred that he had not experienced the slightest pain on the passage of the knife; the subsequent hæmorrhage was very slight, and ceased in a few moments. Mr. A. then went down to his business. He called on the following morning, and stated that he had accomplished his usual work on the day previous and had had no discomfort since the operation, except a slight smarting on urination.

On the 11th of February I operated in the same manner on the second anterior constriction, with the same result as in the first.

On the 24th of February, examination showed a complete freedom from obstruction at the points previously incised, and an entire absence of the purulent discharge. At this date, I operated on the two succeeding strictures—one at two inches and one at two and a half—and the patient was directed to use the 30 F. sound daily until no bleeding followed.

On Monday, March 4th, the remaining strictures, at four inches and at four and a half, were divided, and the cut surfaces kept asunder, by the occasional introduction of a sound, until March 11, 1872, subsequent to which date no treatment of any kind has been resorted to. Early in October last, seven months from the date of the last operation, Mr. A. called to consult me in regard to a difficulty unconnected with genito-urinary apparatus. On inquiry, I ascertained that he had had no evidence of any trouble with his urethra since his last visit on March 12th. In a careful examination of his urethra with No. 30 F. bulbous sound, I was now unable to detect the slightest contraction or lack of suppleness at any point.

Case II.—*November* 16, 1871.—Mr. M. S. came to me with the following history: Had gonorrhœa first ten years since; was treated without injections; disease lasted several weeks. A couple of years subsequent to this he had a whitish discharge from his urethra, which he first noticed shortly after connection with a woman who had scarcely completed her menstrual period. The difficulty was quite painless, but lasted noticeably for four or five months. One year after, or seven years ago, he had what was supposed to be a fresh attack of gonorrhœa, in which the inflammation ran very high, and lasted for several weeks. In this seizure he was treated by means of injections, in addition to internal remedies; a gleety discharge followed the acute symptoms, and lasted for a year, when a third acute attack occurred. To this last he paid no especial attention, until inflammation of the left testicle supervened and confined him to his bed for several weeks. From that time he received occasional treatment for a gleet, which still annoyed him, but never obtained more than a temporary relief. On one occasion following a connection, severe irritation at the neck of the bladder was set up, but which, after a few weeks, appeared to yield to homœopathic treatment, and left him with his old gleet which had continued with slight variations up to November 16, 1871. On this date I examined his urethra; meatus apparently healthy and of normal calibre, No. 28 F. Bulbous sound No. 20 F. reveals a stricture one and a half inch from the meatus, which is exceedingly sensitive, and bleeds freely at the slightest touch.

November 19th.—Conical sound No. 21 F. was passed under protest, on account of the sensitiveness of the part: free bleeding again followed.

February 24th.—Occasional introduction of sound since last record has relieved the sensitiveness and tendency to hæmorrhage, and raised the calibre up to 23 F. Bulbous sound again used, and shows the stricture at one and a half inch from the meatus to consist of three distinct bands close together—the first one-fourth inch in breadth, the second half an inch from it, of about same breadth, and the third separated from it by scarcely a quarter of an inch. The dilating urethrotome was then introduced with the blade set for the posterior stricture, expanded up to 26 F., which was all the patient would bear, and the stricture incised from behind forward, and also from before backward, without moving the instrument. It was then closed and set for the anterior stricture; this was also divided, the instrument closed and withdrawn. The patient remarked that the pain of the entire operation was not sensibly greater than that following the first introduction of the sound. The incision bled quite freely, but the hæmorrhage, under gentle pressure, soon subsided. The results of the cutting were not then examined.

February 27th.—Examination with No. 27 bulb showed resistance, on entering upon the site of the second stricture. On withdrawal, a narrow band was found remaining—this was cut, March 8th, after the manner of the previous operation, and No. 27 bulb passed beyond the site of the strictures, until, at three inches from the meatus, another narrow band was discovered, and at four inches still another. Although these last strictures were distinctly appreciated by the patient as well as by myself, he expressed an unwillingness to submit to any further interference until he could ascertain whether or not the previous operations would give him relief from his discharge.

March 23d.—Patient has introduced No. 27 sound past the seat of his anterior strictures at intervals of a day or two since his last visit, as directed by me, in order to maintain the complete separation of the previous incisions. This was advised to be continued until no oozing of blood followed the use of the instrument. The locality of the wounds made in the previous operation was examined through the endoscope, and healing was seen to have been complete, but the discharge was still present. At this time, by the patient's request, the dilating urethrotome was introduced, dilated to No. 27, and the deeper strictures were again examined and readily defined by means of the indicator attached to the extremity of the canula in which the blade of the urethrotome runs. The instrument was then adjusted for the posterior structure. This was rapidly incised on its superior surface. Setting it again for the anterior band, a like incision was made through it—a turn of the dilating screw giving no pain to the patient, was the evidence that the division of the strictures had been complete; but the patient, fearing an imperfect result similar to that occurring in the first operation, requested that the strictures might be incised on the inferior surface also. Seeing no objection to this, I did so, measuring their locality from the outside, as they could no longer be distinctly defined by the indicator. The incisions on the superior aspect of the urethra were attended with but little hæmorrhage, but those on the inferior surface were followed by copious bleeding, which was only controlled by the introduction of a large flexible bougie. Removing it after an hour, a gush of blood followed. It was then readjusted and retained by a bandage, for the night. The following day, on removal of the bougie, blood again flowed freely. A hard-rubber tube was then introduced, through which the patient could urinate. This was worn constantly for the three succeeding days. No. 28 sound was then introduced with ease, and patient directed to pass it upon himself daily for one week; since which time I have not treated him for his strictures. The gleet disappeared, without other care, in about a fortnight after the last cutting, and he has remained free from it up to the present time. I made a careful exploration of the urethra of this patient in the early part of October last, nearly seven months from the date of the last operation, with No. 28 bulbous sound (the previously-noted calibre of the meatus), and was unable to detect any remains of stricture at any point.

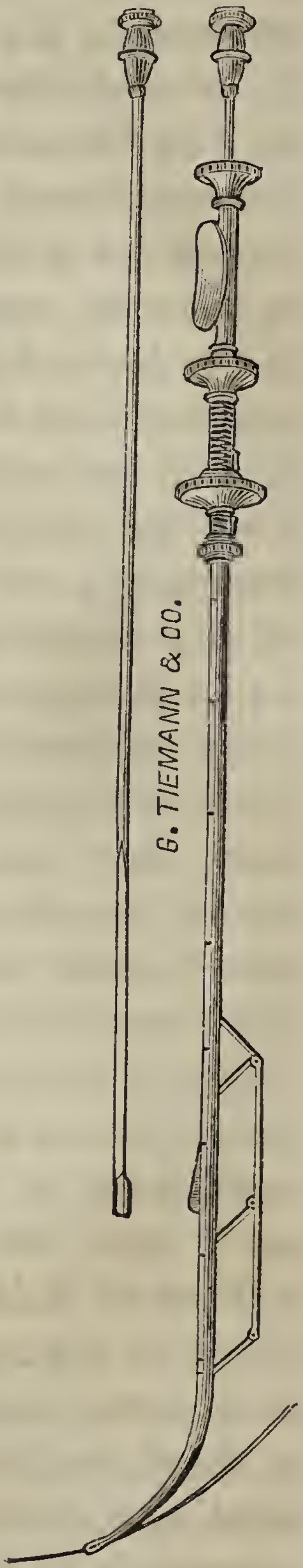
Case III.—Mr. J. C. came under my care in July, 1870, with a first attack of gonorrhœa, which lasted for two months under a combined treatment of copaiba and injections. Subsequent to this, from drinking much beer, he had several returns of the discharge, which readily disappeared under the use of mild injections. In July, 1871, a profuse, painless purulent discharge followed a suspicious connection. This resisted the usual local means, but was controlled by large doses of the oil of the yellow sandal-wood (twenty drops three times a day), but reappeared on the withdrawal of the remedy. Examination December, 1871, revealed a congenital contraction of the meatus—admits only 16 F.; cut it with Civiale, and introduced 24 F. Examination with the endoscope shows two broad inflamed and granular surfaces, involving the entire circumference of the urethra, at about two inches and five inches from the meatus. These were treated by application of a 30-grain solution of the nitrate of silver through the endoscope, at intervals of three or four days, for about a month. Under this treatment the mucous membrane was apparently restored to its normal condition, the discharge ceased, and the patient was believed to be cured. Within a few weeks, however, after a debauch, the difficulty returned, and continued, without treatment, for several months; January, 1872, he presented with a scanty, thin, purulent, discharge. Examination detected stricture at two inches from the meatus; No. 24 bulb passed it with difficulty, and on withdrawal was sharply and firmly held: passing the instrument farther, another band of stricture was recognized at 4½, one at 4¾ and one at 5. The anterior structure was then divided by the dilating urethrotome, and 30 F. sound passed easily through. This instrument was directed to be passed daily until healing of the wound was complete. March 30th, some discharge, though thin and scanty; no obstruction to passage of 30 bulb through site of anterior stricture, but is arrested at 4½ inches. The dilating urethrotome was then introduced, and the three posterior bands previously described were dilated and cut above and below; after which operation 30 bulb passed without hinderance through all. Patient directed to use 30 sound, until no bleeding ensues.

After this time I lost sight of this case, until January 30, 1873, a period of ten months, when, accidentally meeting him, I requested an opportunity of ascertaining the results of the operations. He stated that the discharge continued for about six weeks after the last operation, and that he had had none since, although he had drunken very largely of beer, which had, previously to the operations, always brought back the discharge. Examination with bulbous sound 30 F. failed to detect the slightest trace of a stricture in the course of his urethra. No. 31 was also passed and withdrawn without detecting any unevenness in the urethral walls at any point.

In connection with the three cases above cited, it seems proper for me to state that, with the consent of the gentlemen operated on, I invited several prominent surgeons of the city of New York to meet them at my office on the 20th day of December last, for the purpose of critical personal examination of the results of operations with the dilating urethrotome. Dr. Henry B. Sands and Dr. Robert F. Weir made the examination in the first case, that of Mr. A., with No. 30 F. bulbous sound; in that of Mr. S., the second case, with No. 28, and completely confirmed my impressions as to the entire absence of any abnormal condition in the urethra in both cases. Again, on the first of the present month, February, 1873, the three cases above related, together with that of Mr. W. (operated on in May last for two strictures, one at one-third of an inch from meatus, and one at an inch and a half)—making in all four cases (comprising originally eighteen bands of stricture) were critically examined at my office on the first of the present month (February, 1873), by Drs. J. W. S. Gouley, Thos. T. Sabine, and Fred. D. Sturgis, of New York, and Dr. F. D. Lente, of Cold Spring, New York.

The examination of Mr. S. (previously examined by Drs. Sands and Weir) was made with the bulbous sound No. 28. In this case there had been no abnormality at or near the meatus, and 28 had been accepted and registered as the normal calibre of his urethra before the operations were made. In the remaining three cases the 30 F. bulb was first used, and afterward No. 31, without detecting in either case any obstruction or unevenness in the course of the urethra, either in the insertion or in the withdrawal of the instrument. During the past year, I have operated with the dilating urethrotome on 58 bands of stricture, presenting in 27 patients. The presence of long-standing gleet was the cause of their seeking relief in every instance. And in every instance (with one exception) the gleet has disappeared within 24 hours as the shortest and one month as the longest time after the final operation. The exception was in the case of J. C., case third reported, where frequent indulgence in venery and alcoholic stimulants was kept up throughout the treatment. This list, moreover, includes four cases where a stricture was left uncut in the curved portion of the urethra beyond the reach of the instrument as then constructed.

In no case was any after-dilatation practised by me or by my direction, subsequent to the healing of the incisions. In one case a gentleman, who had for years been in the habit of occasionally passing a steel sound, continued to do so every two weeks for a couple of months succeeding the division of his strictures; but finding, as he said, "*not the least resistance*," he abandoned its use. With the exception of the operation in Mr. S., which was followed by a troublesome hæmorrhage, nothing has occurred in any case to interfere with the regular habits or occupation of the patient. The dilatation is capable of being made so gradual that no shock is experienced from that cause, and the tension falling solely on the strictures, renders them almost and often wholly insensitive — thus the incisions are virtually painless. I have, therefore, in no case preceded or followed the operation by the administration of quinine or morphine, as has always been my habit when employing the instruments of Holt, Thompson, and Maisonneuve. During the frequent use of this form of dilating urethrotome, the objections which have suggested themselves are—1. Its large size, it being of a circumference of 23 millimetres, equal to 13 of the English scale, when closed, and not capable of material reduction; 2. That it is incapable of being used in the curved portion of the urethra. Recognizing the importance of combining dilatation with division in the treatment of urethral strictures, and appreciating the defects in my instrument, my friend Dr. J. W. S. Gouley, of New York, contrived an instrument, with expanding springs, intended to remedy these defects. Dr. Gouley's instrument possessed the great advantage of having a circumference of no more than 12 millimetres, equal to No. 5 of the English scale; but it was open to the objection that, on account of the elliptical shape which the dilated springs necessarily assumed, the tension on the stricture might be easily lost by slight slipping of the instrument, when failure in complete division of the stricture would inevitably result. To avoid the possibility of such an accident, and to reach the deeper portions of the urethra, I devised the instrument which I now present. This specimen, also constructed by Messrs. Tiemann & Co., is equal in size to 13 millimetres, or 5½ of the English scale, and is capable of material reduction. Its mechanism is exceedingly simple. The principle of its action being that of the parallel rule, expanding by means of a screw at the handle, is the same as that upon which my original instrument is constructed. The cutting apparatus is also virtually the same. An independent rod, terminating in a blunt elevation, plays the part of the *bougie-à-boule* for the detection and location of the stricture-points. In order that it may readily be passed down into the curved portion of the urethra, its shaft, which terminates in a copper probe-point, may be easily adapted to the curves of the deeper portions of the canal, and also enables the operator to arrange it for cutting at will upon either the superior or the inferior aspect of the urethra, and, when straightened, can be used as well for operation upon strictures in the straight portion of the canal; a movable hard-rubber slide marks the required depth of insertion. Its efficiency was demonstrated at my office, January 29, 1873, in the presence of Dr. F. D. Sturgis, of New York, by the complete division of a stricture of a previously-ascertained breadth of three-fourths of an inch, and situated one and three-fourths inch from the meatus; the calibre of the canal was thus raised from 23 to 28 milli-



metres by a simple passage of the knife. This instrument has an expanding power up to 40 F.

In the above recital of my experience with the use of the dilating urethrotome, it will be observed that two somewhat novel ideas are suggested—1. That a very considerable number of cases of chronic urethral discharge are dependent upon the presence and influence of comparatively slight contractions of the urethral calibre; and—2. That the complete division of the cicatricial tissue producing such contractions may be followed by an entire absorption of the cicatricial or stricture tissue, and this quite independently of the long-continued use of sounds insisted on by all authorities as necessary to prevent recontraction of the stricture. Now, in regard to the dependence of chronic purulent urethral secretion upon interference with the calibre of the urethra, it may be stated that, in order to effect a complete emptying of its contents after micturition, a complete and healthy action of the muscular layer surrounding it must occur. The presence of any condition which interferes with this, necessarily produces irregular and imperfect emptying of the urethra; its acrid contents are retained for a time, and to a degree, sufficient to become a cause of irritation. This, it will readily be seen, may occur from such a slight plastic infiltration as simply interferes with the suppleness of the tissue without interference with the normal calibre of the canal. Thus strictures, dilated even beyond the normal size of the urethra, still may give rise to an irritating influence upon the mucous lining of the canal. When, besides, there is an *actual narrowing* in the course of the urethra, "the urine impinges with more or less force upon the contracted point,[1] the column of fluid is arrested—in proportion to the degree of arrest is the force of the blow upon the mucous surface at that point, more or less hyperæmia necessarily ensues, and a condition is soon established well adapted to prolong an existing gonorrhœa or gleet; or which, upon slight additional cause such as venereal excitement, or even an unusually acrid condition of the urine, may result in the establishment of a muco-purulent or a purulent discharge without antecedent contagion."

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[1] "Chronic Urethral Discharges," p. 20.

In claiming the general dependence of chronic urethral discharges upon disturbance of the urethral calibre, I am not unaware of the importance attached by many specialists to the presence of local points of granulation, or papillary hypertrophy, along the course of that canal. Accepting the views of Desormeaux, Cruise, and others, I have, in days past, been a firm believer in the value of the endoscope for defining those points with the certainty of ocular inspection; and in the efficiency of local treatment by strong solutions of the nitrate of silver applied to the granulated surfaces through the endoscope; but I have, of late, so frequently observed the same appearances, and by means of the large bulbous sounds have been able to detect bands of stricture underlying them, and further, have seen the granular condition of the mucous membrane promptly disappear upon the complete division of the stricture, without any other treatment, that I have come to look upon the endoscope as a mischievous invention as used for the relief of chronic urethral discharges. The improvement and often apparent cure, which I have seen resulting from local applications through the endoscope, has proved fallacious, for slight and often unrecognized causes have determined the return of the difficulty. I therefore now venture the opinion that localized granular urethritis will be found to result from interference with the muscular movement or with the calibre of the urethra in every instance.

And now, as to the second point. No one could have been more surprised than myself, when, on my quite accidental examination of the urethra of Mr. J. G. A., in October last, I found that complete absorption of the cicatricial tissue had occurred. The interest excited by the apparent result of complete division of the strictures in this case (which, it will be remembered, was the one in which six distinct bands of stricture were present before the operations, and whose case was cited before the New York Journal Association in November, 1871), induced me to seek an examination of patients where like operations had been performed at or near that time. This resulted in the collection of *five* other cases, making six in all—four of which, with an aggregate of seventeen bands of stricture, were examined by committees of surgeons especially skilled in urethral diseases. In cases Nos. I., II., and III., the final operation was performed in March, 1872, and the results examined in the first two in October, 1872; the third, January 31, 1873. Case IV., operated in June, examined in November; Case V., operated in April, and examined in October; Case VI., operated on in July, and examined in November. In all these, an entire absorption of the strictures was absolutely demonstrated.

The above list includes *all* the cases in which I have, thus far, had an opportunity of instituting a final examination. Quite a number of those operated on came from a distance—this fact, and the indisposition of stricture patients to disclose their places of residence, have prevented an extension of the list. The generally-accepted view of authorities, in regard to the results of operations upon strictures of the urethra by any other method than that by the dilating urethrotome, is, that there is a liability to relapse—that, as a rule, unless dilatation, by the occasional passage of a full-sized sound, is kept up *indefinitely*, recontraction of the stricture is likely to occur.

In consideration of the fact that, by every other method except that by combining incision with dilatation, the operation is upon a flaccid urethra, with no accurate guide to the necessary correspondence between the size of the operating instrument and the stricture, and that there are many strictures of larger calibre than can be sundered by the largest instruments in general use, it may be justly inferred that the strictures operated on by such means are, as a rule, not *completely ruptured or divided*—that the stricture is still left in its continuity, and hence the frequency of relapse. If, on the contrary, the stricture is completely sundered at any point, and by subsequent dilatation a space is filled in with new material, when contraction takes place—as from the known character of cicatricial tissue it is certain to do—this contraction naturally takes place at the expense of the weaker new formation, resulting, as it seems to me, in a wider separation of the sundered ends, the irritation consequent upon contraction of the calibre of the canal, and the retention of the irritating secretions, thus decreasing. Hence, the reënforcement of the strictures, by additional plastic material, diminishes, until, by the natural tendency to absorption of foreign or superfluous tissue, the stricture-tissue gradually and completely disappears. Should this view of the *modus operandi* of the complete absorption of the stricture, after complete division, not prove satisfactory, the profession are invited to suggest a more plausible explanation of the fact, which, it seems to me, must be accepted in regard to the six cases, for the most part aggravated examples of their kind which I have had the honor to report to this Society.

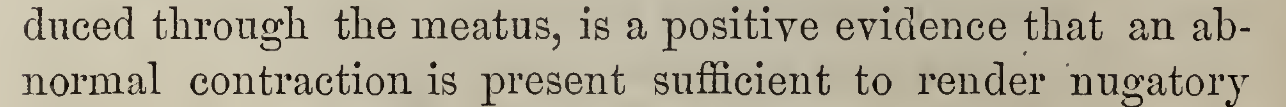
In the cases brought before you it will have been remarked that the occurrence of several distinct bands of stricture in the same urethra is asserted. On this point Mr. Thompson, on "Strictures of the Urethra," London edition, page 68, remarks: "Occasionally several separate strictures may be observed in the same subject. John Hunter records six, Lallemand seven, Colot eight, Du Camp four or five, Leroy d'Etiolles (inventor of the bulbous sound) eleven, and for the most part in the spongy portion of the urethra. Three or four is the most Mr. Thompson has been able to discover."

Among the patients which I have operated on during the past year there were present six in two cases, five in three, four in one, in three cases three, out of twenty-seven cases observed. Dr. Gouley has recorded four cases with four strictures, and over twenty where three were distinctly defined with the bulbous sound.

The rarity of the occurrence of multiple strictures in the same urethra, as reported by authorities, is, I am sure, due to an imperfect method of examination. The use of the ordinary sound is quite valueless in the attempt to recognize or define slight contractions of the urethral canal, which often readily dilate to its normal calibre, while they can be perfectly demonstrated by a bulbous sound two or three sizes smaller. I have frequently met with strictures which could not be appreciated during the passage of a full-sized bulb, but which, after being allowed to remain for a few moments, was perceptibly arrested at a point of stricture on its withdrawal. I may then state it as my conviction that the bulbous sound is the only instrument which can be relied upon for certain diagnosis of strictures of large calibre. For explorations of the straight portion of the urethra, I prefer the metallic olive-shaped sound; for the curved portion, the olive-shaped gum bougies. (Exhibit specimens.) Contractions at the meatus, either congenital or resulting from disease, are of frequent occurrence. Civiale recognized this fact, and is said to have "divided the meatus in nearly three thousand cases, with the best results." Dr. Gouley states that he has divided over two hundred.

By this simple operation I have many times relieved chronic discharges and inflammatory troubles of the urethra and bladder, which had resisted every other means of relief. When such contractions exist, there can be no efficient exploration of the urethra previous to complete division, whether the contractions be cicatricial or congenital. Any resistance to the withdrawal of any bulbous sound which can be introduced through the meatus, is a positive evidence that an abnormal contraction is present sufficient to render nugatory any thorough examination of the deeper portions of the urethra. Bearing this fact in mind, and appreciating the value of the full-sized bulbous sound as a means of diagnosis, I believe that the detection of important urethral contractions will be vastly more frequent, and that complete division of such contractions will result in the relief of much annoyance and suffering from gleet, urethral and vesical inflammation, and irritation, which cannot be permanently removed by any other means.

This metallic, olive-shaped sound, with the small, flexible shaft passing through a perforated handle, to which a thumb-screw is attached for fixing it at any desired point, is one of a set which I have used very frequently for the last twelve years, and has proved in my hands superior to those of any other form or material in use for examination of the straight portions of the urethra, on account of the complete ease of its introduction and withdrawal, and of the exactness with which



it defines and measures every degree of stricture. Its value is also enhanced by its freedom from liability to injury by use or time.

For the relief of close strictures requiring immediate operation, on account of retention of urine, or where, by reason of irritability or extreme density, such strictures are not susceptible of being sufficiently dilated, the instruments and methods of Maisonneuve, Holt, and Thompson are, and I believe must always remain, of inestimable value. Although inadequate for complete and permanent restoration of the urethral calibre—yet, the urgent emergency being relieved, the remaining disability, I am hopeful, may be removed at leisure by the supplementary use of the dilating urethrotome, and thus the continued, often uncertain and perilous, use of sounds or bougies, now required after the ordinary operations on strictures, be virtually abolished.

Clinical Records from Private and Hospital Practice.

I.—*Case of Puerperal Cerebral Embolism.* By T. Gaillard Thomas, M. D., New York.

Mrs. X., a nullipara, aged twenty-eight, a blonde, who had lived a life of ease and luxury, called upon me in 1870 on account of sterility which had existed during the seven years of her married life. Upon investigation, I found a very narrow cervix as the only apparent cause of this condition, and advised the systematic use of sponge-tents. As her next menstrual period was near at hand, one tent was employed before its advent, and the patient requested to see me in twenty days after its completion. She came to me at the appointed time, and, to my surprise, I found that nausea had existed for a week, and that touch demonstrated those changes which lead to a suspicion of early pregnancy. Doubtful as to the existence of pregnancy, I refrained from the further use of tents, and waited for the next menstrual epoch to solve the question. From this time she steadly progressed in her pregnancy, which had followed the dilatation induced by one tent. So immediately did it occur that the patient to this day holds to the conviction that she was pregnant when I used the tent, and that her only astonishment is that it did not produce abortion.

Before going further, I would state that such an immediate result from this mode of treating sterility is one entirely unique in the large experience which I have had in their use.

The lady then left New York for a suburban place, and I placed her in charge of one of my friends who was resident there. I did not again see her until she was advanced to the beginning of the sixth month of utero-gestation. At that time she came to me suffering from general anasarca, with the usually attendant symptoms of cephalalgia, scanty urine, and dyspnœa. The last symptom was especially marked. Upon examining the urine chemically it was found loaded with albumen; the fluid contained in a test-tube becoming more than half of it solid upon the use of heat and nitric acid.

For this condition, the patient was put upon the usual treatment, in the hope that it might be possible to prolong her pregnancy to the seventh month, when her child would be viable. This hope proved delusive, for all movement soon ceased on the part of the child, and the patient became so dangerously ill, from the effects of uræmia, that, at the sixth and a half month, I was forced to induce premature delivery. A putrid child was delivered, and, although the patient recuperated slowly, she was in two months able to go to Florida for the winter months. There albumen and tube casts soon disappeared from the urine, and she returned to New York well.

In the month of July last she called upon me, and told me that she was again pregnant; her last menstrual period having appeared in the early part of May. Anticipating a return of puerperal nephritis, with resulting uræmia, I now watched closely, and examined the urine every fortnight. She progressed favorably until the beginning of December, when albumen and tube casts appeared in the urine, and anasarca began again to show itself. She had now advanced to six and a half months, and my hope was to alleviate her symptoms, and cautiously prolong her pregnancy to seven and a half or even eight months. For this purpose, she was directed to take a warm bath every night at bedtime, to drink a cup of warm tea after it, to sleep in flannel, and to avoid all exposure to damp and cold air. In addition, she took sufficient cathartic medicine to procure three watery alvine evacuations daily, and covered the entire body, except the head and hands, with merino.

Under this treatment the patient did well until five days before the termination of the eighth month, which I calculated would be accomplished on the 20th of January. On the 10th of that month, she was reported to me as having suddenly become anasarcous, as she had done in her previous pregnancy, and as suffering greatly from headache, blurring of vision, great nervousness, and depression of spirits. I at once obtained some of the urine, and, upon application of heat and acid, found it loaded with albumen, as I have described it to have been in her previous pregnancy. The child's movements had evidently become feeble during the past week.

Drs. Metcalfe and Walker now saw her with me, and it was deemed expedient, for the immediate safety of the child and the prospective safety of the mother, to induce premature delivery at once. This I did by the ordinary means, and, after a perfectly natural labor, Dr. Walker delivered her of a healthy male child. The child is now twelve days old, and is a thriving, vigorous little fellow, about whom we cease to feel anxiety. The mother did perfectly well for four days, but then developed the symptoms which I am about to describe.

At twelve o'clock on the fourth night after her delivery, the patient called her nurse in a very feeble voice, and said to her: "I feel very queer, and am sure that I shall faint." The nurse at once removed the pillow from under her head, and gave her some brandy-and-water to drink. In a few minutes she asked the patient how she felt, when she replied, in a mumbling, half-articulate voice, that she could scarcely lift the right arm, and that a stiff and tingling sensation extended over the right side of the face, the upper portion of the body, and down the arm. I saw her soon after this, and found her complaining as I have said, and speaking so indistinctly as to be with difficulty comprehended. She could move the right arm, but she did so like one semi-paralyzed.

The muscles of the right side of the face were equally feeble, and, when requested to whistle or blow out a lighted candle, air escaped from the right angle of the mouth. The leg appeared unaffected. The pulse was beating at 125 to the minute, and the temperature was 101° Fahrenheit. The extreme weakness of the pulse and the paleness of the patient alarmed me. She was likewise somnolent, and slept with the right eyelid only partially closed. The heart-beat was feeble and "quick," but no abnormal sound could be detected in it. I decided that the symptoms were due to cerebral embolism, but Dr. Walker regarded them, from the first day, as resulting from the occurrence of a convulsion during the night, when the nurse slept. I disagreed with this diagnosis because the nurse's description of the attack, and the development of imperfect articulation, contradicted it; because it had occurred after a great diminution had taken place in the existing uræmia; and because the tongue showed no signs of having been bitten. The week which succeeded this primary attack convinced Drs. Walker and Metcalfe that embolism was the source of the symptoms.

On the next day the patient's condition became very alarming, from the extreme exhaustion which marked it. The pulse became exceedingly feeble, and beat at 147 to the minute, the temperature rose to 103½°, and the patient looked pallid and was somnolent. She now took stimulants freely, and as stimulants to the heart and nervous system strychnia and digitalis were given. This condition lasted without marked amelioration for four days, when a very gradual improvement took place. Twenty days have now elapsed since the attack. The patient still suffers from loss of muscular power on the right side except the leg, but the pulse is uniformly under 100, of better quality, and the temperature ranges from 99° to 100½°. Yesterday, she was propped up in bed for ten minutes without any sense of faintness—now, begins to eat solid food.

Supposing the diagnosis to be correct in this case (I think it is), an interesting question which suggests itself is, Where did the embolus come from which plugged a cerebral vessel? If it had entered a uterine sinus, it would have been emptied into the right auricle, would have passed into the right ventricle, and thence have been sent to the lungs in some of the vessels, in which it would have probably remained as an obstruction.[1] It must have passed from the left heart, upon the walls or valves of which it probably had existed as a concretion, and thence was driven upward to the brain.

II.—*Rare Case of Extra-Uterine Pregnancy.* By S. F. Starley, M. D., Fairfield, Texas.

Early in December, 1872, I was called to see, in consultation with Dr. W. G. McInnis and my son, Dr. W. F. Starley, a lady who, seven weeks before, had been delivered of a living child. She was attended at the time of delivery by an elderly physician, who I believe abandoned the case before Dr. McInnis was called in. At the time of our visit, we found her very much exhausted, pulse 140 per minute, anorexia, and occasional nausea and vomiting.

The abdomen was as large as that of a woman at full term, and the outlines of a full-grown fœtus could easily be made out through the thin walls of the abdomen, as the woman was quite emaciated. She stated that vigorous movements of the child had continued from the time of her delivery up to within a few days of our visit. This statement was corroborated by several ladies present, who declared that they had both seen and felt the fœtal movements as described by the patient. At the time of our examination there were no movements, and no sounds of the fœtal heart could be heard.

We administered chloroform, and, after dilating the cervix uteri, explored the uterus to the fundus, with the fingers, which was readily accomplished as the womb was pressed down in the pelvis by the bulk and weight of the tumor above. With the fingers in the uterus, we could distinctly feel the resisting body of the fœtus through the uterine parietes.

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[1] The possibility of an embolus passing through the capillary net-work of the lungs, growing larger by accretion, and subsequently entering the left heart, and passing to the brain, is admitted by Rindfleisch and other German pathologists.

The patient and her husband informed us that there had been no tumor or enlargement of the abdomen previous to her pregnancy, which was her first.

Our diagnosis was extra-uterine pregnancy of the kind known as ventral.

Owing to the extremely exhausted condition of the patient, we did not think that she could survive any operation for the removal of the fœtus. We placed her upon sustaining treatment with the hope that she would rally sufficiently to admit of the performance of gastrotomy, but she continued to decline, and died some two weeks after our visit.

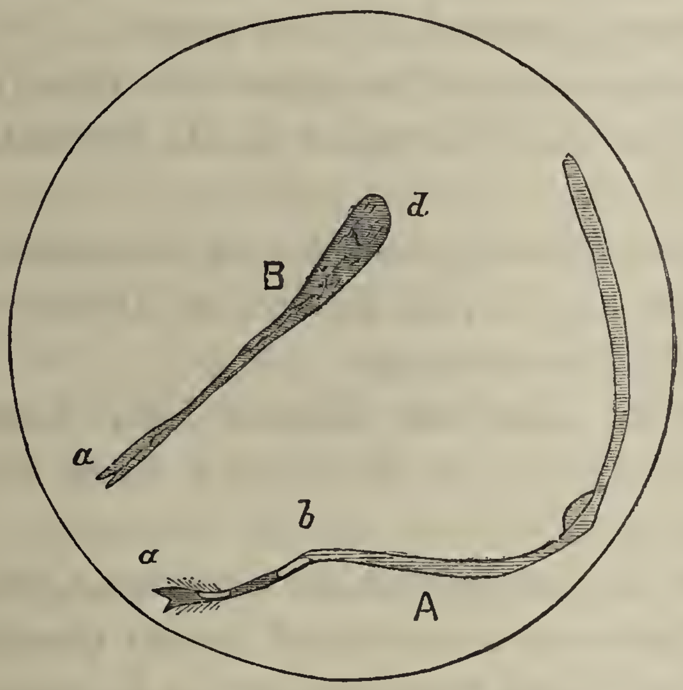
It is to be regretted that no *post-mortem* examination was made. This was unavoidable, as her residence was seventeen miles from town, and we were not informed of her death until several days afterward; and, even had we known of it, her friends would not have consented to an autopsy.

The only case that I have been able to find upon record, where a woman went to full term with both an intra- and extra-uterine pregnancy, is the one reported by Mr. Louis R. Cooke, in the fifth volume of the "Transactions of the Obstetrical Society of London," and quoted by Dr. Alfred Meadows, in his "Manual of Midwifery." "The patient was delivered at full term of a dead child, when it was observed that a large tumor existed in the abdomen. The patient died in forty-eight hours, and, on opening the abdomen, a full-sized female child was found in the cavity enclosed in its own membranes, and having apparently been developed in the fimbriated extremity of the Fallopian tube." I should have said before that our patient was about twenty-one years of age, and had enjoyed good health up to the commencement of her pregnancy.

III.—*Curious Protozoon in Urine.* By C. E. Nelson, M. D., New York.

On December 9, 1872, a gentleman brought me a phial of his urine to examine; on simple ocular inspection, the urine was seen to be clouded with mucus to two-thirds of its volume; under the microscope, nothing whatever was seen, with the exception of a single protozoon, which forms the subject of this communication. Two phials were brought on that day; in the urine of one only was this protozoon seen; the urine was not left in any open dish, but in a well-corked phial, so that the protozoon did not enter from the surrounding atmosphere, or owe its existence to decomposition. The urine of several phials, subsequently brought to the office, has been carefully examined, but no other specimens have been seen. The microscope used in this instance magnifies 300 diameters; the protozoon, figured, is drawn of the actual magnified size, as observed, and at the moment of observation.

The protozoon (A) would now be motionless; now, the neck (*a*, *b*) would swing upward and downward; now, the worm would bend in sinuosities throughout its entire length, the movements following in rapid succession; again, the protozoon would change its position in the field of the microscope from a horizontal to a vertical one; at other times it would very suddenly contract, and assume the appearance at B, the caudal end (*d*) being truncated or club-shaped; in a few seconds it would, with lightning-like rapidity, shoot out to its full length.



I shall not hazard any conjectures as to what kind of protozoon this is, but it seems to be allied to what is portrayed in Cobbold's work as the *Dactylius aculeatus*.

Proceedings of Societies.

MEDICAL SOCIETY OF THE STATE OF NEW YORK.

Annual Session.

The Society met in the Perry Building, Albany, February 4, 1873. The inaugural address was delivered by the President, C. R. Agnew, M. D., of New York, who announced the following committees:

On Credentials—Drs. W. H. Craig, of Albany; J. G. Orton, of Binghamton; P. V. S. Pruyn, of Kinderhook.

Drs. Orton and Pruyn not being present, Drs. A. L. Saunders, of Brookfield, Madison County, and C. E. Rider, of Rochester, were appointed in their place.

Business Committee—Drs. Ellsworth Eliot, of New York; J. V. Kendall, of Baldwinsville; G. H. Hubbard, of Lansingburg.

Committee on Arrangements and Receptions—Drs. J. V. P. Quackenbush and W. H. Bailey, of Albany; Darwin Colvin, of Clyde, Wayne County.

Committee on Medical Ethics—Drs. Thomas Hun, of Albany; E. R. Squibb, of Brooklyn; D. B. St. John Roosa, of New York.

On motion of Dr. Frazier, of Camden, Oneida County, a committee of three were appointed by the President, to invite the Governor and such members of the Legislature as belong to the regular medical profession.

Committee—Drs. Robert Frazier, of Camden, Oneida County; Lewis Post, of Lodi, Seneca County; Thompson Burton, of Fultonville, Montgomery County.

The President then introduced Dr. G. W. Barr, of Titusville, delegate from the Pennsylvania Medical Society.

Dr. Eliot, chairman of the Business Committee, announced a paper by Dr. George Burr, of Binghamton, to be read by Dr. William C. Wey, of Elmira, Dr. Burr being absent. Subject of paper: A case of occlusion of the femoral artery from fracture of the femur, followed by mortification and amputation. It was referred to the Committee on Publication. The Business Committee also announced a paper by E. H. Bridges, of Ogdensburg. Subject: Disease of the left ovary resulting in fatal hæmorrhage. Referred to Publishing Committee.

The following papers were read by title: "Obituary Notice of Dr. Darius Clark," by Dr. B. F. Sherman; "Hernia," by Dr. J. H. Pooley, of Yonkers; "The Effects of Railroad Travel on the Health of Women," by Eli Van De Warker; "Idiopathic Peritonitis," by Dr. Joseph Lewi, of Albany; all of which were referred to the Committee on Publication.

Dr. D. B. St. John Roosa, of New York, read a paper, entitled "History of the Progress of Otology," which was discussed by Dr. Knapp, of New York. It was referred to the Publishing Committee.

Dr. William B. Alley, of Nunda, read a paper on "The Ultimate Result of Nerve Injuries in Gunshot Wounds," which was discussed by the members of the Society.

The Business Committee inquired what disposition the Society would direct in regard to papers of invited members.

Dr. Roosa offered the following:

Resolved, That the committee be requested to consider papers that may be presented by invited members of the society, and cause them to be read if thought expedient.

The President announced the following committee on the President's address: Drs. Vander Poel, John P. Gray, E. Krackowizer.

Dr. J. W. S. Gouley, of New York, read a paper on "Perineal Lithotomy," which was discussed by Dr. Krackowizer, of New York, and Dr. Hutchison, of Brooklyn.

The President announced the following Committee on Nominations:

First district, Dr. J. C. Hutchison; second, Dr. J. Foster Jenkins; third, Dr. H. B. Whiton; fourth, Dr. Alexander Ayres; fifth, Dr. Alonzo Churchill; sixth, Dr. William C. Wey; seventh, Dr. Caleb Green; eighth, Dr. H. W. Dean.

Dr. Vander Poel read his report in regard to changing the time of meeting of the Society.

On motion of Dr. Eliot, the report was received, and the discussion postponed till the evening session.

Dr. Thomas Addis Emmet read a paper on "Laceration of the Perinæum, involving the Sphincter, and Operation for securing Union of the Muscle." It was referred to the Committee on Publication.

Dr. E. H. Parker remarked upon a case of "Dislocation of the Tarsus from the Astragalus," exhibiting the specimen.

Dr. E. M. Moore, of Rochester, read a paper on "Intra-Capsular Fracture," illustrated by two cases. It was discussed by Dr. Gurdon Buck, Dr. Douglas, and Dr. A. N. Bell.

Dr. E. M. Hunt, delegate from the New Jersey State Medical Society, was introduced.

The Secretary, Dr. W. H. Bailey, read the following: The Medical Society of the County of Albany requests the pleasure of meeting the members of the State Society, delegates, permanent, honorary and invited members, in Perry Hall, on Wednesday evening. The invitation was accepted.

Dr. Eliot, from the Business Committee, read the following papers by title, and they were referred to the Publishing Committee:

"Case of Fatty Tumors of the Abdomen," by James S. Bailey, M. D.

"Senile Hypertrophy of the Prostate Gland," by James S. Bailey, M. D.

"Unusual Case of Inflammation of the Urinary Organs," by S. T. Clark, M. D.

Dr. E. R. Squibb, of Brooklyn, chairman of Committee on the Pharmacopœia, read his report. The report, on motion, was accepted.

A paper entitled "Dropsy after Scarlatina," by Dr. George Douglas, was read by title and referred to the Publishing Committee.

The report of the committee on changing the time of meeting of the Medical Society of the State of New York was then taken up in accordance with the recommendation of the Business Committee, and discussed until the hour of adjournment.

Second Day, February 5th.—After the reading and adoption of the minutes of Tuesday's proceedings, Dr. Oliver

White, of New York, chairman of the Committee on By-Laws, reported through the Secretary. The report was received.

The Secretary announced that he had received letters from several distinguished physicians, regretting their inability to be present at this meeting; among others, Dr. Henry I. Bowditch, of Boston; Dr. C. E. Brown-Séquard, of New York; Dr. William Brodie, of Detroit; and Dr. E. M. Snow, of Providence, Rhode Island.

Dr. F. N. Otis, of New York, read a paper on "Strictures of the Male Urethra, with Results of Operation with the Dilating Urethrotome."

Dr. Gouley, of New York, and Dr. Newman, of New York, discussed the paper.

Dr. Roosa arose to a question of privilege, making remarks and explanations regarding a paper in the Transactions of last year by Dr. Stephen Rodgers, of New York.

Dr. James R. Leaming, of New York, read a paper on "Plastic Exudation within the Pleura." Referred to the publishing committee.

Dr. Charles H. Porter, Treasurer, made his annual report. On motion, it was referred to the following auditing committee, appointed by the chair: Drs. J. V. Cobb, H. Corliss, and Staats.

Dr. Eliot offered the following resolution:

Resolved, That candidates elected to permanent membership who neglect to pay the fee required by our by-law, for one year from the date of their election, shall forfeit their rights as permanent members. Adopted.

Dr. A. N. Bell read his report on the "Quarantine Establishment of New York," being a report of the Committee on Hygiene.

Dr. A. B. Burger, of Saratoga County, presented a specimen of a diseased kidney, with a description of the case. It was referred to the publishing committee.

Dr. Wm. T. Lusk, of New York, read a paper on the "Pathology of Labor Pains." It was referred to the publishing committee.

Dr. Gurdon Buck presented a case of reconstruction of the under lip. Referred.

Dr. Cobb, of the committee to whom was referred the

Treasurer's report, reported that they had examined the same, and found it to be correct.

Dr. M. H. Eddy, of Middlebury, Vermont, delegate from the Medical Society of the State of Vermont, was introduced to the Society; also Dr. John J. H. Love, delegate from the New Jersey State Medical Society; also Dr. S. L. F. Simpson, of Concord, New Hampshire.

Dr. Lewis A. Sayre read a paper on "Diastasis of Head of Femur and Formation of Artificial Hip-Joint." Referred to the publishing committee.

Dr. J. V. P. Quackenbush read a paper on "Hydrorrhœa."

Dr. E. R. Squibb reported from the Committee on Ethics regarding Niagara County Medical Society. His report was unanimously adopted.

An obituary of Dr. P. Van Olinda, by Dr. A. Van Derveer, was read by title, and referred to the publishing committee.

Dr. Douglas made his report as delegate to the Connecticut State Medical Society. Dr. Corliss reported as delegate to the Maine Medical Association. Dr. Newman reported as delegate to the New Jersey State Medical Society.

Dr. Jacobi, from the Committee on Foundling Asylums, made his report. Dr. Joel Foster made a minority report on the same. On motion, the majority report was accepted and adopted.

Dr. Kendall, of Baldwinsville, offered the following:

Resolved, That the by-laws of this Society be altered so that section eleven of paragraph three shall read as follows:

¶ 3, § 11. At the annual meeting, at the close of the morning session of the first day, the members of the Society shall be organized into eight committees by senatorial districts, as established by the law of 1836, the members present from each district constituting one committee, each of which shall elect one member; the members thus elected, with one appointed by the President as chairman, shall constitute the committee of nominations.

It was moved and seconded that it be laid on the table for the present. Carried.

Dr. Storck offered the following:

Resolved, That the bill entitled "An act relative to the Medical Laws of the State of New York," passed by both Houses of the Legislature last year, but vetoed by Governor Hoffman, meets with the approval of this Society.

Resolved, That a committee of three be appointed by the chair to take all necessary steps to secure the passage of said act by the Legislature during its present session.

Dr. Vander Poel, Dr. Squibb, and Dr. E. M. Moore, discussed the resolution.

On motion, it was laid on the table.

Dr. Newman offered the following:

Resolved, That when we adjourn, we adjourn this annual meeting to the fourth Tuesday in September, for the transaction of executive business.

Resolved, That, after this year, the annual meeting shall be held at Albany, on the fourth Tuesday of September.

Resolved, That the Secretary be authorized to make the amendment of the by-laws legal, if legislation is required.

After much discussion, the whole subject was laid on the table.

Dr. B. L. Hovey read a report of five consecutive cases of Colles fracture. It was referred to the publishing committee.

Dr. J. P. Gray exhibited to the Society micro-photographs of brain-tissue.

Dr. H. Knapp read a paper on "Hemiopic and Sector-like Defects of the Field of Vision, and their connection with Diseases of the Heart and Brain." It was referred to the business committee.

Dr. J. P. Palmer, of Victor, Ontario County, read a paper on "Spotted Fever."

Dr. Corliss read the "Biography of Dr. B. P. Staats, of Albany."

The following papers were read by title, and referred to the publishing committee:

"Three Cases of Abscess and Pelvic Peritonitis from Ulceration of the Appendix Vermiformis relieved by Operation," by Dr. R. B. Bontecou, of Troy; "Complete Dislocation of the Tenth Dorsal Vertebra Forward," by Dr. Graves, of Steuben County; "On the Use of Atropine in some Diseases of the Eye," by Dr. Edwin Hutchinson, of Utica—sent as a communication by the Oneida County Medical Society.

Dr. Babcock reported for the censors of the Eastern District that they examined E. V. Stryker, and found him well qualified, and recommended him as a proper person to receive a diploma from this Society.

In the evening a reception was given to the State Society by the Albany County Medical Society, at the rooms in Perry Building, at which a large number of prominent citizens were present.

Third Day, February 6th.—The minutes of the previous day's proceedings were read and adopted.

Dr. Vander Poel, chairman of the committee on the President's address, made a report, which was accepted.

Dr. Robertson, of Albany, read a paper entitled "Cases in Practice." Referred.

Dr. J. Marion Sims read a paper entitled "A Case of Enucleation and Removal of an Intra-Uterine Fibroid Tumor, with instruments for the same."

Dr. Wm. C. Wey read a paper, entitled "Some Observations concerning the Hypodermic Injection of Ergot in Uterine Fibroids."

It was discussed by Drs. Sims and Squibb, and other gentlemen, and then referred to the Committee on Publication.

Dr. J. N. Northrop, of Albany, presented a case of congenital loss of the right arm, with remarks upon it.

Dr. Jacobi believed that it was a case of arrested development.

The Business Committee read the following papers by title:

"Penetrating Gunshot Wounds of Cranium, with Recovery." By A. Van Derveer, M. D.

"Sequelæ of a Case of Purpura Hæmorrhagica." By H. S. Cranall, M. D.

Dr. C. Devol presented two pathological specimens.

Dr. A. N. Bell offered the following:

Resolved, That the Standing Committee on Hygiene be added to, and hereafter recognized as one of the standing committees under section 111, page 20, of Organization and By-Laws of the Society, and that said committee place itself in immediate correspondence with the county societies.

Unanimously adopted.

Dr. A. N. Bell offered the following:

Resolved, That the Standing Committee on Hygiene consist of seven members, one of whom shall be Dr. C. R. Agnew; the remainder of the committee to be appointed by the chair.

Adopted.

The President appointed the following the Committee on Hygiene:

Drs. A. N. Bell, S. O. Vander Poel, H. D. Didama, H. W. Dean, John Ordronaux, Stephen Smith, C. R. Agnew.

The nominating committee reported through their Secretary, Dr. J. Foster Jenkins, as follows:

For President, Dr. E. M. Moore, of Rochester; Vice-President, Dr. Francis Burdick, of Johnstown; Secretary, Dr. William H. Bailey, of Albany; Treasurer, Dr. Charles H. Porter, of Albany.

FOR CENSORS.

Southern District.—Dr. E. R. Squibb, of Brooklyn; Dr. E. H. Parker, of Poughkeepsie; Ellsworth Eliot, of New York.

Eastern District.—Dr. John P. Sharer, of Herkimer; Dr. James L. Babcock, of Albany; Dr. G. H. Hubbard, of Lansingsburg.

Middle District.—Dr. M. M. Bagg, of Utica; Dr. Horace Lathrop, of Cooperstown; Dr. C. G. Bacon, of Fulton.

Western District.—Dr. Caleb Green, of Horner; C. C. Wyckoff, of Buffalo; Dr. D. Colvin, of Clyde.

PERMANENT MEMBERS.

First District.—Dr. Robert Newman, Dr. J. Marion Sims, of New York County.

Second District.—Dr. T. Blanch Smith, of Rockland County; Dr. Wm. H. Helm, of Westchester County.

Third District.—Dr. E. R. Hun, of Albany County; Dr. R. H. Ward, of Rensselaer County.

Fourth District.—Dr. John Parr, of Montgomery County; Dr. D. G. Dodge, of Clinton County.

Fifth District.—Dr. H. G. P. Spencer, of Jefferson County; Dr. Wm. L. Baldwin, of Oneida County.

Sixth District.—Dr. J. H. Dolson, of Steuben County; Dr. Wm. Fitch, of Tompkins County.

Seventh District.—Dr. George W. Earll, of Onondaga County; Dr. E. W. Simmons, of Ontario County.

Eighth District.—Dr. C. N. Palmer, of Niagara County; Dr. J. R. Cotes, of Genesee County.

The gentlemen nominated by the committee were unanimously elected.

Dr. Jenkins offered a resolution, as a part of the report of the committee, that no one should be eligible for election to permanent membership until he had been a delegate for three years.

Dr. Squibb moved to amend this so as to require delegates to be present at the meetings and serve for three years. After considerable discussion, the resolution was carried as amended, and the report of the committee adopted.

After a few appropriate remarks by the retiring President, the Society adjourned.

Bibliographical and Literary Notes.

Art. I.—*Aural Catarrh and Curable Deafness.* By Peter Allen, M. D. New York: William Wood & Co., 1872, pp. 277.

The title of this book would not lead one to anticipate the highest kind of scientific work, and a somewhat careful perusal has not belied the suspicion. In the preface it is stated that "there has not been, so far as I am aware, any new separate work, however limited in design, published in this country upon aural disease, since that of Mr. Toynbee in the year 1860." Inasmuch as this book has very largely drawn upon the American edition of Troltsch, translated and edited by Roosa, the above statement seems to us unkind, to say the least.

In this same preface the author speaks of the lack of system in other books on the ear, and says, "I have accordingly taken considerable pains in the construction of what may be called the ground-plan of the ensuing short series of lectures." We had read the book previous to the preface, and possibly should not have arrived at this conclusion without the aid of the above statement. One point we would most heartily concur in, in regard to the examining boards of schools of medicine not testing the proficiency of the undergraduate in aural medicine and surgery, thereby not insuring the same attendance on this branch of instruction as on others where an examination must be successfully passed.

On pages 9 and 10 the author enters at some length into the appearances of the membrana which so largely enable us to determine the state of the auditory apparatus, and in our judgment much exaggerates its importance. Facts constantly assert that a membrane may be very much altered and nearly normal hearing be present, and also that, with a typical membrane, we often have a high degree of deafness, with other signs of ear-trouble. At pages 11 and 14 are a couple of cases, the one being impacted cerumen, and the other the slightest tubal catarrh, both of which are completely and brilliantly cured at once, with the remark that "many similar cases you see treated in the out-patients' room with just as satisfactory results."

As far as we know, American aural surgeons do not have such brilliant results as in these and other cases recorded in this book. Would it be unreasonable to ask aural surgeons to report an occasional unfavorable case? The book is so full of statements inciting us to dispute, that we must resist the temptation to speak of more than a few of them. At page 22, on the subject of illumination, the author fails to allude to the fact, so well known, of Von Troltsch's being the first to bring the concave mirror into general use in examinations of the ear.

Possibly this was an oversight. His mode of examining the ear and his physiological observations are very good. On page 44 he speaks of seeing objects through the membrane of the adult, which to us seems nearly, or quite, impossible. On page 49 we would greatly dissent from the statement that, even in severe inflammations of the mucous lining of the tympanic cavity, there is "no pain whatever." Fronting page 54 is a very good woodcut, showing the ossicles and membrane in position. It is much better than many plates usually found in books on aural surgery. On page 64 is the first allusion to the work of Von Troltsch, which, as the work is apparently founded on the last-named, does not seem to us quite ingenuous. There seems to be a strong tendency to call instruments Allen's (see pages 65 and 67), where he speaks of "my modified Politzer bag," and the "tympano-manometer" (Allen's), "which latter I modified, and got made after the suggestion of Politzer."

This book, curiously, takes up ninety-nine pages out of its two hundred and seventy-seven in the modes of examining the ear, and the instruments used. We are, however, bound in honor to assert that the work is faithfully done, barring the strong tendency to original inventions in instruments: e. g., Fig. 9, p. 79, representing a second modification of the Politzer bag. The pernicious effect of unnecessary multiplication of instruments must be frowned down. We take pleasure, in this connection, in contrasting this method with the one of most barren simplicity represented in the American edition of Troltsch—a simple rubber bag, with a tube attached to it. On page 86 is a description of the mode of introducing the catheter, which so strongly resembles Kramer's that, when we see the method labelled "my own," surprise takes instant possession of our faculties. On page 91 he objects *in toto* to the use of a "catheter-holder," which in America is thought to be of great assistance. We are glad to see so full an acknowledgment of the catarrhal causation of most forms of deafness, and are pleased with the simple and inclusive appellation of "aural catarrh" to so large a number of diseases of the ear.

On page 120 the causation of adhesions within the tympanum is ascribed to the retention of mucus, resulting from an imperforate Eustachian tube; a theory not likely to be extensively indorsed.

On page 122, "from three to six leeches" are recommended for acute aural catarrh. As far as we know, it is not customary to use more than from one to three leeches for this purpose here; indeed, many cases under our own observation have given way before a single leech.

Heroic therapeutics are, we suspect, more a characteristic of foreigners than of Americans. We notice, as an omission, the absence of any recommendation to puncture the membrane in acute aural catarrh, but are glad to see advised the impropriety of inflating the tympanic cavity too early in acute inflammation; we believe it sometimes aggravates the disease, and often results in great pain.

On page 130 are a couple of "illustrative" cases of cure of acute catarrh of the tympanum by extraordinarily simple means. American surgeons do not often succeed as well.

On page 141 we see that the author adheres to the notion of Hinton in regard to the pathology of "dry, dense, and stiff" mucous exudations within the tympanum, which we regard as a pernicious doctrine. At every little interval we observe claims to originality which are worthy of notice. At page 142 is a sample: a bony rim or plate in the circumference of the fenestra ovalis, to prevent the stapes from propulsion inward, "though it always escapes the notice of anatomists, exists nevertheless."

In Lecture X., on "Simple Aural Catarrh" (continued), is a very intelligible statement of the question; though it resembles Troltsch, it is clearer and more systematic.

Under the head of tinnitus aurium dependent on chronic catarrhal affections, the author says: "Morbid anatomy, more accurate methods of examinations, and a stricter observation of the physical signs accompanying this disease, have in a great measure cleared up the mystery surrounding the production of noises in the ears or head." Is this true? At page 167 occurs a wonderful case of aural disease, in a physician, where "a puff or two with the Politzer bag cured him."

We must hasten along, for we are tempted at every step to turn upon inaccurate statements. The subject of tinnitus aurium is, on the whole, pretty well disposed of. Albeit the doctor has amply recognized the throat causation of aural disease, he has not well described or treated it. In stating the evidences of obstructed Eustachian tubes, he omits to mention one of the most important, to wit, improvement to the hearing by inflation.

Politzer's treatment of catarrhal otitis is quoted and criticised, with which we heartily concur. Catheterization of the Eustachian tube and injection of the tympanic cavity by fluids are, in our opinion, too frequently resorted to by Continental surgeons. On page 196 occurs an admirable statement to the effect that, since Politzer's invention, the author has not used the catheter on a child under fifteen years of age. This hints at the great boon conferred by Politzer's invention. On page 201, after having detailed most of the means used to render the Eustachian tubes pervious, and which had failed, he admits that "we are compelled to have recourse to the catheter."

It seems as though it was high time our English friends had overcome their superstitious fear of catheterization of the Eustachian tube. Turnbull's two fatal cases from the use of the catheter are quoted. We feel that if these cases were blotted out of the book of remembrance, it would be far better for humanity, for certainly the inference usually derived from them is not a true one. Many points are made by the author of too theoretical a nature, which in the dim light of our intelligence on aural subjects is certainly objectionable. We want as many hard facts and as few fancies as possible. On page 202 is an illustration in point, to wit: "I imagine that thick films of muco-purulent secretions adhere to the fenestræ, especially to the round opening, and of necessity impede vibration." On page 210 the liability of "dried and hardened" mucus to set up adhesive processes in the cavity, is certainly a novel pathological statement. On pages 213–221 are four cases where the cure is as wonderful as any previously observed, and which are, as we have before hinted, not average or representative cases, and seem hardly worthy the dignity of an aural surgeon. No sane man will believe that cases of ear-disease in general are so easily cured.

Lecture XII. is entitled Purulent Aural Catarrh, or otitis, which is evidently a nomenclature peculiar to the author.

On page 233 is another of the many attacks men are perhaps too prone to make upon the general practitioner. This seems to us unnecessary and uncharitable, and, in the long-run, is not likely to cause the general profession to think more highly of our attainments. On page 234 occurs the statement that purulent disease of the cavity may cause a perforation of the membrane without severe pain or great constitutional disturbance, which, as it is sometimes denied, we take pleasure in saying has occurred under our own observation a number of times.

In describing the mode in which the membrane is perforated, the author is far from being exact or lucid. On page 238 he alludes to a phenomenon which the writer can confirm by his own observation: if a solution of continuity of the ossicula, in purulent disease without perforation of the membrana, the artificial membrane, by its inward pressure, restores this continuity and improves the hearing. The diagnostics of perforation of the membrane are insufficient and carelessly stated—a very important omission. It is to be agreeably noticed that the terms polypus and granulation are used as synonymes. It is high time the superstition surrounding the nature of aural polypi was done away with. In this connection the author criticises Toynbee's diagnostics relating to the position of polypi, on the ground that the mode of examination in vogue in Toynbee's time was too imperfect to be wholly relied upon; in this we heartily concur. The treatment of acute purulent catarrh is somewhat inefficient; the author does not mention the use of the leech, which, in the earlier stage, is often a main reliance, nor of opium, which has so great power in controlling this form of inflammation. The treatment of mastoid diseases by free incision must meet with the approval of the judicious. Again, on page 256 occurs something like a repetition of the statement previously made to this effect, to wit: "For, recollect, if the purulent secretion is retained and becomes hardened and calcified, it may cause rigidity of the ossicles, impaction of the stapes, and consequent severe deafness." It hardly seems possible that a surgeon could, at this time, make such a statement. At page 262, *et seq.*, occurs a somewhat interesting history of the invention of the artificial membrane, including both Yearsley's and Toynbee's instruments, but we cannot concur in many of the remarks made concerning the mode of application, or the theory by which the membrane causes improvement. It will surprise most readers, probably, to hear Yearsley's cotton-wool (artificial membrane) compared as an invention with Graefe's operation of iridectomy for glaucoma. The book ends by a couple of cases of perforate membrane, treated by the cotton-wool method, and astringents.

Although we have very freely, and somewhat in detail, criticised this book, and do believe it to be full of inaccuracies, and largely borrowed from Von Troltsch, with insufficient acknowledgments, we are glad it has been written, and think it may do something to stimulate advancement in aural surgery. To many it may be in a good degree useful. Its style is agreeable and easy of comprehension.

Art. II.—*Surgical Diseases of Infants and Children.* By M. P. Guersant, Honorary Member of the Hôpital des Enfants Malades, Paris, etc., etc. Translated by Richard J. Dunglison, M. D. 8vo, pp. 354. Philadelphia: H. C. Lea. 1873.

This work having appeared in the columns of the *Medical News and Library*, during the past two years, it may be presumed that a fair proportion of American readers are familiar with its contents. However, as it has just appeared in book form, a few comments may not be out of place, more particularly as a little time has elapsed since it was written, the American editor having added no notes upon more lately devised questions.

In the chapter on *fractures* no mention is made of Moore's views of Colles's fracture, or of his treatment of fractured clavicle. In connection with comments of an able reviewer[1] upon Dr. Moore's papers, which appear in the "Transactions of the Medical Society of the State of New York," for 1870, we would state that, so far as the clavicle is concerned, Moore's method of treatment is not "essentially the same as that of Prof. Sayre." The latter surgeon fixes the arm in a perpendicular position which cannot make tense the clavicular fibres of the pectoral muscle. This point escaped the quick eye of Prof. Hamilton,[2] when he accorded equal credit of discovery of the principle to Sayre. The last-named gentleman had never given a rational explanation of the *modus operandi* of his dressing until he heard Moore's address in Albany. So far as the radius is concerned, while Prof. Moore does not

[1] *American Journal of Medical Sciences*, October, 1872, pp. 496, 497.

[2] "Fracture and Dislocations," fourth edition.

claim that the fracture is always accompanied with dislocation of the ulna, we are disposed to think (judging partly from the number of deformities observed in old cases), that the complication exists in a considerable proportion of cases. The writer of this article has seen Dr. Moore at different times reduce the fracture in question, attended with unmistakable dislocation of the ulna, some of the cases having been unsuccessfully treated for weeks by the usual method. Our author mentions (pp. 262–273) the occurrence of dislocation of the lower end of the ulna in children, and speaks, in a general way (p. 262), of the frequent association of fracture with dislocation, recommending, in most cases of the latter, immovable apparatus lest a fracture may have been overlooked.

We think the author does not define sharply enough cases of *club-foot*, arising from spastic contraction, and those caused by paralysis of the opposing muscle; no mention is made of Sayre's splints, in the treatment of joint-diseases; nor of the atomizer and aspirator. The author's preference for lithotrity over lithotomy in male children, when no contraindication exists, is well known.

The various topics are presented rather as they would naturally arise in a course of clinical lectures than in the order usually adopted in didactic treatises; each subject embraces a separate chapter, and no effort is made at classification.

The work, as may be expected from Guersant, is full of good practical suggestions, making a valuable addition to our surgical library.

Art. III.—*Doctor in Medicine, and other Papers on Professional Subjects.* By Stephen Smith, M. D. New York: William Wood & Co., 1872.

Dr. Smith says, "The papers contained in this volume were originally contributed to various periodicals."

These little essays were written mostly during the earlier career of the author, when his name was well known on the editorial pages of some of the best of our older medical journals. This fact explains the quaintness of these papers, but in nowise detracts from their present readableness. Each subject is treated very briefly, and the book will be read with much pleasure by those who desire acquaintance with the method of treating ethical subjects, of a gentleman so distinguished as Dr. Smith for the supreme excellence of his many contributions to the technical literature of surgery and medicine.

Art. IV.—*Hand-Book of Compound Medicines; or the Prescriber's and Dispenser's Vade Mecum.* By Arnold J. Cooley. Philadelphia: J. B. Lippincott & Co., 1873, pp. 219.

This little book contains an extensive collection of the formulæ of the various pharmacopœias in the English language, as well as some from French and German sources. There are, moreover, included the stock compounds of the chief British hospitals, and such magistral or proprietary remedies as have attained an extended notoriety. The plan of the work has been very thoroughly carried out, and in the book any desired formula can be readily found. Its use will be chiefly and solely to those who may need a handy reference-book or an aid to memory.

Art. V.—*Questions in Surgery.* By Wm. Warren Green, M. D., Professor of Surgery in the Medical School of Maine, etc. Portland: B. Thurston & Co., 1872, pp. 178.

This book, consisting entirely of questions, has been prepared by Prof. Green with special reference to the use of his classes, "to furnish them with a guide that shall enable them to use any of the standard text-books in surgery to advantage." The questions are very carefully arranged, and will prove useful and suggestive to all students of surgery.

Books and Pamphlets Received.—A Treatise on Apoplexy, Cerebral Hæmorrhage, Cerebral Embolism, Cerebral Gout, Cerebral Rheumatism, and Epidemic Cerebro-Spinal Meningitis. By John A. Lidell, A. M., M. D., ex-Professor of Anatomy in the National Medical College, Washington, D. C.; formerly Surgeon to Bellevue Hospital; late Surgeon United States Volunteers, etc., etc. New York: William Wood & Co., 1873.

A Manual of Histology. By Prof. S. Stricker, of Vienna, Austria. In Coöperation with Th. Meynert, F. Von Recklinghausen, Max Schultze, W. Waldeyer, and others. Translated by Henry Power, of London; James J. Putnam and J. Orne Green, of Boston; Henry C. Eno, Thos. E. Satterthwaite, Edward C. Seguin, Lucius D. Bulkley, Edward L. Keyes, and Francis E. Delafield, of New York. American Translation, edited by Albert H. Buck, Assistant Surgeon to the New York Eye and Ear Infirmary. With 431 Illustrations. New York: William Wood & Co., 1872. Pp. 1106.

The Diseases of the Stomach. Being the third edition of the "Diagnosis and Treatment of the Varieties of Dyspepsia." Revised and Enlarged. By Wilson Fox, M. D., F. R. C. P., F. R. S., Physician Extraordinary to her Majesty the Queen; Fellow of the University College, etc., etc. London and New York: Macmillan & Co., 1872.

Dental Caries and its Causes. An Investigation into the Influence of Fungi in the Destruction of the Teeth. By Drs. Leber and Rottenstein. Translated by Thomas H. Chandler, M. D., Professor of Mechanical Dentistry in the Dental School of Harvard University. With Illustrations. Philadelphia: Lindsay & Blakiston, 1873.

Myringectomy, followed by decided Improvement in the Hearing Power, in a Case of Adhesion between the Membrana Tympani and the Promontory, etc. By J. S. Prout, M. D., Brooklyn, L. I. Reprinted from Transactions of the Medical Society of the State of New York. Albany: Argus Company, 1873.

A Treatise on the Theory and Practice of Obstetrics. By William H. Byford, A. M., M. D., Professor of Obstetrics and Diseases of Women and Children in the Chicago Hospital College, etc., etc. Second edition, thoroughtly revised. New York: William Wood & Co., 1873.

Ophthalmic and Aural Surgery Reports. By Julian J. Chisolm, M. D., Clinical Professor of Eye and Ear Surgery in the University of Maryland, and Surgeon in charge of the Institute. Reprinted from the *Richmond and Louisville Medical Journal* for January, 1873.

A Report of Microscopical and Physiological Researches into the Nature of the Agent, or Agents, producing Cholera. By T. R. Lewis, M. B., and D. D. Cunningham, M. B., Assistant Surgeons, on special duty. Calcutta: Government Printing-Office, 1872.

The Mother's Register. Current Notes of the Health of Children. Part I.—Boys. The Mother records for the Physician to interpret. From the French of Professor J. B. Foussagrives. New York: G. P. Putnam & Sons, 1873.

The Pharmacopœia of the United States of America. Fifth Decennial Edition. By Authority of the National Convention for Revising the Pharmacopœia, held at Washington, A. D. 1870. Philadelphia: J. B. Lippincott & Co., 1873.

Free Parks and Camping-Grounds; or Sanitariums for Sick and Debilitated Children during Summer Months. By J. M. Toner, M. D., Washington, D. C. Reprinted from the *Northwestern Medical and Surgical Journal.*

On a Hæmatozoon inhabiting Human Blood: its Relation to Chyluria and other Diseases. By T. R. Lewis, M. B., Assistant Surgeon, H. M. British Forces, India. Calcutta: Government Printing-Office, 1872.

A Hand-Book of Therapeutics. By Sydney Ringer, M. D., Professor of Therapeutics in the University College, Physician to University College Hospital. Third edition. New York: William Wood & Co., 1872.

Medical, Surgical, and Obstetrical Statistics of the Belleuve and Charity Hospitals, 1870. First Annual Report. Bellevue Press Department of Public Charities and Correction, 1871.

Report on Quarantine on the Southern and Gulf Coasts of the United States. By Harvey E. Brown, Assistant Surgeon, U. S. A. New York: William Wood & Co., 1873.

First Annual Report of the Supervising Surgeon of the Marine Hospital Service of the United States. For the Year 1872. Washington: Government Printing-Office, 1872.

Contributions to Mental Pathology. By I. Ray, M. D., Author of "Medical Jurisprudence of Insanity, and Mental Hygiene." Boston: Little, Brown & Co., 1873.

The Practice of Surgery. By Thomas Bryant, F. R. C. S., Surgeon to Guy's Hospital. With Five Hundred and Seven Illustrations. Philadelphia: Henry C. Lea, 1873.

Fourth Annual Report of the St. Elizabeth's Hospital and Home, No. 172 Columbia Street, Utica, New York. Utica: Curtiss & Childs, 1872.

Braithwaite's Retrospect of Practical Medicine and Surgery. Part lxvi. January, 1873. New York: W. A. Townsend.

Burns and Scalds: Their Treatment, with Cases. By Joseph F. Montgomery, M. D. San Francisco: J. F. Brown, 1872.

Infant Mortality. By H. C. Rand, M. D., St. Paul. Reprinted from the *Northwestern Medical and Surgical Journal.*

Transactions of the Medical Association of the State of Alabama. Annual Session held in Huntsville, March, 1872.

Transactions of the Medical Society of the State of West Virginia. Wheeling: Frew, Hagans & Hall, 1872.

Official Army Register for January, 1873. Published by order of the Secretary of War.

Translations.

Prepared for the New York Medical Journal by Alfred E. Walker, M. D.

Dilatation of the Anus and Rectum.—Prof. G. Simon has, in *Archiv für Klinische Chirurgie*, a paper on this subject, in which he recommends carrying the process to an extent which is at least not common; that is, not only for surgical operations, but also for examinations of the abdominal viscera, he forces the whole hand into the rectum. By this means one is able to get behind and above the uterus, and detect tumors the size of cherry-stones, to examine the ovaries, and, in men, to determine accurately the condition of the bladder, and ascertain the existence of calculi, their volume and number. In fact, one can explore, not only the rectum, and part of the sigmoid flexure, but the anterior wall of the abdomen, the mesenteric glands, the lower part of the kidneys, and, indeed, all the viscera in the lower two-thirds of the abdomen. The operation facilitates also the removal of foreign bodies from the rectum, favors the cure of ulcers by allowing a free escape to the morbid products, and, in case of fistulæ, may be followed by the use of Sims's speculum, making surgical procedures much easier than when performed through any of the common anal specula. Claiming all these advantages for the process of forcible dilatation, he declares that it produces no injury to the structures acted on. In some cases he incises the sphincter ani, in some cases merely distends it. Under the influence of chloroform the rectum of an adult, if there is no contraction of the pelvis, may be so enlarged as to admit gradually the hand and part of the forearm, permitting the fingers to be introduced into the sigmoid flexure; and this but rarely causes a slight tearing of the anus. Where the anus is particularly unyielding, or when it is necessary for surgical operations, lateral incisions may be made near the raphe, or at the sides of the coccyx.—*Gazette Hebdomadaire*, January.

Carbuncle.—The *Belgian Scalpel* contains a suggestion from J. Guérin relating to the use of the hypodermic syringe in emptying carbuncles. Pushing the canula into the middle of the tumor and drawing the piston, the pus, if there be any, will, of course, enter the syringe. This may then be detached from the canula, which is left sticking in the flesh, emptied; and so the process is repeated as often as necessary. It is not claimed that the method has any advantages over the crucial incision, except that it is less painful, and so better suited to timid patients.—*Mouvement Médical*, January.

Tetanus cured by Neurotomy.—Drs. Busi and Marinelli (*Riv. di Med. di Chir. e di Ter.*) report two cases of tetanus cured by neurotomy. In one case a filament of nerve protruding into the wound was cut off; in the other, this process proving inefficient, a portion of the nerve was excised above the wound.—*Gazzetta Medica Italiana-Lombardia*, December.

Membranous Dysmenorrhœa.—This disease, or symptom, is the result of endometritis, and on the nature of the intra-uterine inflammation depends the character of the matter expelled. Membranous dysmenorrhœa, therefore, is not a distinct disease, as English writers regard it, but a symptom of the different kinds of inflammation to which the uterine mucous membrane is subject. According as the inflammation is catarrhal, pseudo-membranous, diphtheritic, etc., the products, whose painful expulsion constitutes the above-named disorder, will vary; consisting, as the case may be, of desquamated epithelium, mucus, false membrane, or exfoliations of the mucous membrane.—*Gazzetta Medica Italiana-Lombardia*, December.

Sarcoma of the Dura Mater. (*Gaz. Med. Ital.-Lomb.*, November.)—Prof. Bizzozero, in a paper read before the Academy of Medicine of Turin, gives the results of examinations, made by himself and Dr. Bozzolo, of sarcoma of the dura mater. He has in view chiefly the relation of the texture of tumors to that of tissues in which they originate. The principal components of these sarcomata are large cells, very much flattened, so that, seen in front, they appear quite broad, but, seen at the side, very thin. They resemble the endothelial cells that line serous membranes, differing from them only in their greater size, and the greater homogeneity of their protoplasm. With these one finds small globular cells, which, on accurate observation, prove to be a number of endothelioid cells, superimposed one on another. These elements are in round or elongated alveoli, incompletely separated by trabeculæ, which, at the periphery, merge into the capsule of the tumor. Not infrequently the trabeculæ are composed, not of fibrous connective tissue, but of endothelial cells, similar to those found in the alveoli. The blood-vessels run in the substance of the trabeculæ. This is the typical structure, which is, however, frequently modified, especially in two ways, giving the tumor a fibrous or calcareous character. The first alteration consists in that the endothelial cells, those in the globules, as well as those in the trabeculæ, produce about themselves an amorphous or fibrous intercellular substance, which makes the tumor much harder, and gives it the aspect, consistence, and structure of fibroma. In the second form, the connective fasciæ, and still more the globules, become infiltrated with salts of lime, thus giving origin to calcareous concretions, of a spherical or elongated form. These modifications of the texture of the tumor explain the contradictory opinions of various authors about the proper classification of this species of neoplasm. The author has no hesitation in regarding the different forms as mere varieties of a single species, to which he would give the name of endothelioid sarcoma. An examination of this sort of tumor, therefore, sustains the principle of the strict dependence of neoplasms on the structures from which they take their growth. The dura mater contains numerous flattened connective cells among its connective fasciæ; and the globules of endothelium are often met with in the pseudo-membrane of chronic pachi-meningitis.

Gleet treated with Medicated Bougies.—G. Lorey gives the results of eighty cases of gonorrhœa and gleet treated by this means. The cases of gleet, twenty in number, were all cured in a short time; the longest course included twenty-two bougies, one a day, and the shortest three bougies, the average being nine. The author observes that these cases, being treated in a hospital, doubtless derived benefit from the regular life there; it is not uncommon for a gleet to be greatly exacerbated by a long walk, slight excess in drinking, or a single act of coition. The bougies used were seven and a quarter inches long—i. e., about the length of the urethra—and from one-eighth to one-sixth of an inch in diameter. The centre was of gelatine, the outside of gum-arabic mixed with the medicine, three-fourths of a grain each of sulphate of zinc and belladonna. After being dipped in cold water, they are easily inserted. In the sixty cases of gonorrhœa, no such startling results followed. The bougies served as well as the ordinary injections to cut short the disease—no better. But for two of the incidents of gonorrhœa, pain in making water and nocturnal erections, bougies medicated with opium (three-fourths grain), or opium and belladonna (āā, three-fourths grain), acted admirably. Put in at night, they insure comfortable rest and easy micturition in the morning. It has been urged that, like permanent bougies, they might produce orchitis; but they are dissolved in the course of an hour and a half; and no orchitis occurred in any of the eighty cases observed by M. Lorey.—*Annales de Dermatologie et de Syphilographie*, November, 1872.

Quantitative Test of Urea.—At a meeting of the Société Médicale des Hôpitaux, M. Yoon exhibited an apparatus devised by him to bring it within the power of ordinary medical practitioners to find easily the amount of urea in any specimen of urine. It consists of a glass tube fifteen inches long, with a glass cock inserted about one-quarter of the way from the upper end. This is plunged in a long test-tube of mercury, so that it is filled with mercury itself up to the cock; then the cock is turned and the urometer is raised. Now, if a certain quantity of urine is poured into the upper part, and then the cock opened, the urine will run into the lower part, displacing a certain amount of mercury, and this permits the seclusion of the urine from the air. Then a certain amount of hypobromite of soda, having soda in excess, is introduced in the same way. The urea is thus decomposed, and nitrogen and carbonic acid are disengaged. The carbonic acid is absorbed by the excess of the alkali, and the nitrogen accumulates between the fluid and the cock. After a few minutes the amount of gas can be ascertained by the graduated scale (the tube is graduated both above and below the cock), and from this the amount of urea is computed. M. Yoon has found by experiments that a centigramme of urea gives 3.7 cubic centimetres of nitrogen. It is necessary to deduct four or five per cent. from the amount obtained, because the hypobromite decomposes creatinine and urates also.

Treatment of Asphyxia.—The *Gazette* publishes a paper presented at the Academy of Sciences by M. G. De Bon, on the subject of the treatment of asphyxiated (especially of drowned) people. Artificial respiration is to be kept up by raising the arms; and it is well to immerse the body in a bath warmed to 98½° Fahr. Blowing into the mouth is an excellent way to inflate the stomach, but this does not seem to favor at all the aëration of the blood. If the stomach is to act as a life-preserver, it must be inflated before entering the water. Pressure on the sternum is dangerous, tending to put a stop to the movement of the heart. After four or five minutes' submersion, all efforts at resuscitation are futile. Artificial respiration may be kept up, and the heart may be roused to act by an interrupted galvanic current, but nothing follows, because a large clot has already formed in the heart; and, until we devise some way to dissolve this clot, the blood cannot be made to flow. If it is true that persons have come to life after remaining more than five minutes under water, we must suppose that fright caused sudden syncope, and thus suspended the effort to breathe, and the action of the heart.—*Gazette Hebdomadaire*, December 13, 1872.

Intra-Medullary Ossification.—In support of the view held by some physiologists that marrow is capable of ossification, the following case is reported by E. Spillmann: A soldier, named Paul Bonnard, had his femur fractured an inch and a half above the knee, by a bullet, on the 2d of December, 1870.

On the 9th the thigh was amputated at the lower third. Early in February the femur began to protrude beyond the flesh, and abscesses formed in the stump; and, until March of the next year, the patient suffered in this way, the thigh, part of the time, being enormously swollen, and the abscess es extending as high up as the less trochanter. The sequestrum, which became slightly movable in September, was removed on March 29, 1871; it comprised the whole circumference of the femur, and was seven inches long. Now, on the 8th of March, there had been removed from this sequestrum a solid cylinder of bone, soft outside but hard within, which, after being dried, measured two and a quarter inches in length and one-third of an inch in diameter. Under the microscope, it appeared as a perfectly-organized bone. It seems impossible to deny, therefore, that, under the influence of prolonged irritation, the marrow in this case did actually ossify.

Distinctness of Vision.—The Academy of Medicine of Paris has given the Orfila prize, for 1872, to an essay on the above subject. The *Gaz. Hebdom.* says of it: "We have here a subject of study which hardly any one would have thought of, and yet one which may throw light on many obscure and contradictory assertions made by eye-witnesses of events. The author has given twenty-two years to working it out. He has studied the conditions necessary to distinct sight by natural light as well as by artificial light, at all distances, in all sorts of places, at all hours of the day and night, in all kinds of weather, and in all seasons. He has demonstrated scientifically how far the evidence of the eyes may be depended on, and the errors and illusions to which they are liable; he has shown the influence of imagination, of memory, and of association of ideas, the effect of the play of light, and the contrasts of colors. In a word, he has added a new chapter to legal medicine, by inventing a precise, in some sort mathematical procedure, for the delicate investigation of questions of identity."—*Gazette Hebdom.*, December 13, 1872.

Miscellany.

The Late Dr. James L. Brown.—At a stated meeting of the New York Academy of Medicine, held February 6, 1873, the following resolutions were unanimously adopted:

Whereas, It has pleased an All-wise Providence to remove from our midst our beloved fellow and associate, Dr. James L. Brown; therefore, be it

Resolved, That, by the death of Dr. Brown, the Academy of Medicine has been deprived of a member who, by his zealous and intelligent coöperation in all its labors, has proved himself a most valuable and esteemed associate.

Resolved, That the character of Dr. Brown, both in his professional and social relations, has always been such as to command our highest respect and warmest friendship, and that we regard his removal in the midst of an active and useful career as an unusually great loss not only to ourselves, but to the profession at large.

Resolved, That we tender our most sincere and heart-felt sympathy to the family of Dr. Brown in their deep affliction.

Resolved, That a copy of these resolutions be sent to the bereaved family, and that they be published in the medical journals of this city.

AUSTIN FLINT, M. D., *President*.

W. T. WHITE, M. D., *Secretary*.

At a stated meeting of the New York Academy of Medicine held February 6, 1873, Dr. Austin Flint, President, in the chair, appropriate remarks were made by the following Fellows on the death of Dr. James L. Brown, who was to have read the paper of the evening: Dr. T. Gaillard Thomas rehearsed the particulars of his short illness and sudden death, and said he was one of the noblest and most upright men in the profession, as he was intimately known to him for seventeen years. He, more than any one else, built up the "Obstetrical Clinic" of the College of Physicians and Surgeons. His mental traits were strong, concise, and intense. Another strong trait was entire devotion to duty. He had already performed ovariotomy twice, and would have proved a prominent man in that specialty. Dr. Brown died with pneumonia, aged forty-two years.

Dr. Peaslee said that he had been intimate with deceased for ten years. His physical, moral, and intellectual faculties were great. In the whole domain of gynæcology not a single point could be raised with which he was not thoroughly acquainted. In closing, the speaker remarked that the whole truth was never known by the profession concerning him.

Drs. Anderson, Chamberlain, and J. C. Smith, made similar remarks.

A committee of three, consisting of Drs. Thomas, Chamberlain, and Smith, was appointed by the chair, to draft suitable resolutions.

The other medical associations with which the late Dr. Brown was connected have also adopted appropriate resolutions regarding his untimely death.

The Late Dr. Charles Henschel.—At a stated meeting of the New York Academy of Medicine, held November 7, 1872, the following resolutions were unanimously adopted:

Resolved, That the Fellows of the New York Academy of Medicine recognize the hand of God in the death of their esteemed associate fellow, Dr. Charles Henschel, which occurred in Zurich, Switzerland, on the 18th of September last.

Resolved, That, as a tribute of respect to his memory, they wish to place upon record their appreciation of his long and faithful professional labors, as well as his kindness and cordiality, both as an associate and friend.

Resolved, That by the amiability of his private life, and his untiring devotion to the care of the sick, he has endeared himself to a wide circle of devoted friends, and has left us an honorable example worthy to be cherished and imitated.

Resolved, That a copy of these resolutions, duly authenticated, be communicated to the family, and that they be published in the New York *Staats Zeitung* and the medical journals of this city.

E. R. Peaslee, M. D., *President.*

W. T. White, M. D., *Secretary.*

At a meeting of the members of the New York Medical Library and Journal Association, it was unanimously

Resolved, That we have heard with sincere regret of the unexpected decease of our late associate and trustee, Dr. C. Henschel.

Resolved, That we tender our deepest sympathy to all the members of his bereaved family, and express our sure trust that all the strong consolations which an all-kind Providence always gathers around the memory of the good, and kind, and wise man, will ever be theirs to comfort them.

Resolved, That we gladly hold up to our own members the bright example of his truly honorable and unusually attractive character; of his untiring devotion, both scientific and practical, to our noble profession; and of his great skill and tender care of the sick.

Resolved, That we also gratefully acknowledge his interest in our Association, and his generosity to it.

Resolved, That a copy of these resolutions be conveyed to his family by an appropriate committee, and copies be also sent to the medical journals of this city.

A. Underhill, *President*.

A. C. Post,
J. C. Peters,
F. A. Burrell, } *Committee*.

The Late Dr. Augustus Wohlfarth.—At a stated meeting of the New York Medico-Legal Society, held on the 14th of November, 1872, the following preamble and resolution were adopted:

Whereas, This Society has authentic notice of the sudden and untimely decease of its esteemed member and officer, Augustus Wohlfarth, M. D.:

Resolved, That this Society recognize, in the death of Dr. Wohlfarth, the loss of one its earliest, and, though unassuming, one of its most zealous, faithful, and efficient members and officers.

Resolved, That while this Society thus estimates its own loss, it extends its sympathy and condolence to the bereaved family of our lamented associate.

Resolved, That a copy of this expression of the Society be forwarded to the family of the deceased, and to the medical journals of this city.

T. C. Finnell,
Stephen Rogers, } *Committee*.

J. Ross, *Recording Secretary*.

Notice to Editors and Publishers.—In order to secure a list as complete as possible of medical publications for the report on medical literature, to be made at the next annual meeting of the American Medical Association, we are requested to ask all publishers of medical works in the United States to send a statement of their publications from May, 1872, to May, 1873, to the chairman, Dr. Austin Flint, New York City. It is desired that the statement shall embrace, not only new publications, but new editions of works within the time specified, and also republications of foreign works. Editors of medical journals throughout the country will confer a favor by giving publicity to this notice.

Compliment to an American Author.—We are pleased to learn that the excellent work of Dr. T. Gaillard Thomas, on "Diseases of Women," has been translated into the German language. It is published in Berlin, under the following title:

"Lehrbuch der Frauenkrankheiten von Dr. T. Gaillard Thomas, Proffessor der Geburtshülfe, Gynäkologie und Padiätrik, in New York, etc., etc. Nach der zweiten Auflage des Originals übersetzt von Dr. Max Jaquet, praktischem Arzt und früherem Secundarazt der königl. geburtshülflichen und gynäkologischen Universitätsklinik zu Berlin. Mit 225 Holzschnitten. Berlin, 1873. Verlag von August Hirschwald."

Foreign Notes.—The French medical papers contain several notices of the late emperor's death, with discussions about its cause, which would hardly command much attention on this side of the ocean. Also several notices of the bogus diplomas issued by the sham medical colleges in Philadelphia This last subject seems to have excited considerable interest abroad. We were in error last month concerning the action of the Paris Academy of Medicine, with reference to allowing midwives the use of ergot. The final decision, as published in papers received subsequently, was, that no restriction should be put upon them.

Medical Posts in Berlin.—In the *Nouvelle Presse Libre*, of Berlin, is an account of permanent medical posts to be established in different parts of that city, under the direction of a distinguished physician. Each post is to have a staff of fifteen, besides a physician-in-chief; and these are to alternate with one another, so that five will be at the service of the public at all times day and night. All the expenses will be met by the society, which will make no demand on outside bounty. The fees will depend on the condition and rank of the patient.

Death of Baron Dupin.—The unexpected death of the ex-Emperor Napoleon, says *l'Union Médicale*, seems to have caused a sort of panic among persons suffering from diseases of the bladder, and to this panic the late Baron Dupin fell a victim. The baron was in his eighty-ninth year, and, on hearing of Napoleon's death, became very nervous, and set about sounding himself with an unsound instrument, which broke, a portion lodging in the bladder. Death ensued before an operation could be attempted for the removal of the fragment.

Death from Nitrous-Oxide Gas.—The *Lancet* of February 1st publishes the details of a case of death from nitrous-oxide gas administered for dental purposes. The patient was in good health, and every precaution was observed, the gas being given in such a way as to secure a constant supply, free of expired air. This, we believe, is the first case of death from nitrous oxide that has been reported in Great Britain.

Correction.—We are requested by Dr. D. B. St. John Roosa to make the following correction in his paper published in the last number of the JOURNAL. The sentence on page 180, sixth line from top, should read thus: "In America, our cases of chronic non-suppurative inflammation, occurring in young persons, are usually very tractable without paracentesis."

New York Academy of Medicine.—At a stated meeting of the Council of the Academy, held January 28, 1873, Dr. Bradford S. Thompson was elected Statistical Secretary of the Academy, for a term of five years. At the last stated meeting of the Academy, Dr. W. B. Lewis, now residing at the South, was made a non-resident fellow.

A Prize Worth writing for.—The *British Medical Journal* of December 14th says: "The Riberi triennial prize of 20,000 lire (£800) has been awarded to Dr. Giuseppe Corradi, director of the surgical clinic at Florence, for four works on the Diseases of the Genito-Urinary Organs, three of which are as yet unpublished."

The Death of Napoleon.—The British and other foreign journals, medical and secular, abound in lengthy reports of the case of the late emperor, with a great variety of criticisms on its management. Many of the opinions expressed are at least precipitate, and much that has been written on the subject is of no interest whatever. "The Faculty is at fault—

long live the Faculty," says the *Doctor*. We content ourselves with giving a report of the autopsy, as signed by J. Burdon Sanderson, M. D., Dr. Conneau, Dr. Le Baron Corvisart, Sir Henry Thompson, J. T. Clover, and John Forster. The document is dated Camden Place, Chislehurst, January 10th, 1873, 6.30 P. M., and is as follows:

The most important result of the examination was, that the kidneys were found to be involved in the inflammatory effects produced by the irritation of the vesical calculus (which must have been in the bladder several years) to a degree which was not suspected, and which, if it had been supposed, could not have been ascertained. The disease of the kidneys was of two kinds: there was, on the one hand, dilatation of both ureters and of the pelves of the kidneys; on the left the dilatation was excessive, and had given rise to atrophy of the glandular substance of the organ. On the other hand, there was subacute inflammation of the uriniferous tubes, which was of more recent origin. The parts in the neighborhood of the bladder were in a healthy state; the mucous membrane of the bladder and prostatic urethra exhibited signs of subacute inflammation, but not the slightest indication of injury. In the interior of the bladder was found a part of a calculus, the form of which indicated that half had been removed. Besides this, there were two or three extremely small fragments, none of them larger than a hemp-seed. This half calculus weighed about three-quarters of an ounce, and measured one and one-fourth inch by one $\frac{5}{16}$th of an inch. There was no disease of the heart nor of any other organ, excepting of the kidneys. The brain and its membranes were in a perfectly natural state. The blood was generally liquid, and contained only a few small clots. No trace of obstruction by coagula could be found either in the venous system, in the heart, or in the pulmonary artery. Death took place by failure of the circulation, and was attributed to the general constitutional state of the patient. The disease of the kidneys—of which this state was the expression—was of such a nature, and so advanced, that it would in any case have shortly determined a fatal result.

Sir William Gull records a separate opinion in the following terms:

"I desire to express the opinion that the phosphate-of-lime calculus which formed the nucleus of the mass was the result of the prior cystitis (catarrhus vesicæ), and not the cause of it. This nucleus was of uncertain duration, and may even have been more recent than supposed in the appended report.

"However this may be, it was incrusted by two distinct and recent formations of crystalline phosphate. The inner incrustation around the amorphous phosphate of lime was dense, and separated from the outer incrustation by a lesser cellular but crystalline deposit of triple phosphate. It seems, to my judgment, more in accordance with clinical experience to regard the cystitis as the prior lesion, and that this, by extension, as is common in such cases, affected subsequently the ureters and pelvis of the kidneys. No doubt, in the later stages of the malady the calculus by its formation and increase, was an augumenting cause of the lesions.

"The other facts and statements I entirely indorse.

"WILLIAM W. GULL, M. D."

"*January* 10, 1873."

Death from Homœopathic Doses of Chloral.—We find in the Toronto *Globe*, of January 18th, an account of the death, under the combined influence of chloroform, hydrate of chloral and sulphate of morphia, of C. B. Jones, a homœopathic physician. As will be seen by the subjoined evidence, the deceased had submitted to a surgical operation by Duncan Campbell, also a homœopathic physician, who seems on his own admission wholly responsible for the manner in which the patient was treated while recovering from the effects of the anæsthetic. It is clear that death was chiefly, if not entirely, due to the large (homœopathic?) and repeated doses of hydrate of chloral. Duncan Campbell is, we believe, looked upon as a leading homœopathic practitioner in Ontario, inasmuch as his name appears first in the board of five gentlemen of that school who act in conjunction with the council of the College of Physicians and Surgeons of Ontario —the only body now empowered to issue licenses to practise medicine in that province. The following is his testimony, with that of others, given at the coroner's inquest:

"Duncan Campbell, M. D., sworn, said: 'About three weeks ago deceased called at my house and complained to me of what he took to be internal piles; I told him I thought he was in error as to the nature of his complaint, judging from the symptoms; I said I thought it was fissure of the rectum, and advised him to submit to an operation for its radical cure;

he refused at that time, contenting himself with obtaining temporary relief; he consented afterward to have the operation performed, but stipulated that he should not only have chloroform during the operation, but should be kept under the influence of chloral hydrate until the pain should have time to subside. The operation was performed at three o'clock yesterday afternoon; the fissure was large and deep, and must have caused him great pain; I administered chloroform, and the operation was successfully performed; I then gave him forty grains of chloral hydrate, but as this did not bring him relief, I administered a second dose, with a quarter of a grain of sulphate of morphia; I then left, his condition being as good as could possibly be expected; I was recalled in about half an hour, and on arriving found him dead.'

"Lorne Colin Campbell, M. D., sworn, said: 'I was requested by my father, Dr. Campbell, to assist him at an operation on the deceased. Deceased was perfectly conscious after the operation, and insisted that it had not been performed at all. My father weighed out two drachms of chloral hydrate, and administered one-third. Twenty-five minutes after he gave the deceased another dose, combined with a quarter of a grain of the sulphate of morphia. Deceased then went to sleep, and we both withdrew, not apprehending any danger.'

"Thomas Payne, M. D., sworn, said: 'I have heard the evidence of Dr. Campbell and his son, and am of opinion that the treatment as detailed in the evidence was judicious.'

"After a short deliberation, the jury returned the following verdict: 'That deceased, Charles Blackburn Jones, died on the 15th inst., from the effects of chloral hydrate, after a most painful operation, and it was given at the previous request of the deceased, who purchased the drug himself.'"

Pathology of the Horse-Disease.—Prof. Gross, at the Jefferson College clinic, recently exhibited the *post-mortem* specimens obtained from a horse which died during the late epidemic, upon which he made the following remarks:

"The horse was of medium size, and fourteen years old; he had been previously healthy during seven years in the service of Dr. Maxwell, his last owner. During the prevalence of the horse-disease, he suffered in common with his solipede brethren, and, although treated with the greatest care, he relapsed, when apparently convalescent, and died. This may be taken as a typical case of death from the disease, complications having been avoided by the treatment.

"The examination, carefully made by Mr. West, disclosed a large quantity of serous fluid in the thoracic cavity; the lungs were partially adherent, and a section sank in water, showing a condition of infiltration or hepatization. In the trachea and larger bronchial tubes, spots of lymph and numerous ecchymoses indicated the severity of the inflammation, and the mucous membrane, as far as the interior nares, was discolored and covered with a muco-purulent secretion. Many of the bronchial lymphatic glands were enlarged. There was no evidence of disease discovered in the œsophagus or remaining viscera, and death evidently resulted from pleuro-pneumonia. The sweeping character of this disease, and its rapid spread over the continent, lead me to consider it of the nature of dengue. It is not communicable by ordinary contact; the morbific germs float in the atmosphere, making it epidemic rather than contagious."—*Philadelphia Medical Times*, *December* 14, 1872.

Another Quadruple Amputation.—In our issue for November 16th (Miscellany, p. 110), we quoted from a foreign exchange an account of a quadruple amputation by Dr. Begg, of Dundee, which was said to be the only one on record in which all four extremities had been removed. Dr. Woodhull, U. S. A., has been kind enough to call our attention to a case detailed in Circular No. 3, U. S. A., War Department, S. G. O. (Case DCXII., p. 216), in which "a similar set of operations was performed by Acting Assistant-Surgeon Alfred Muller, at Fort Ridgely, Minnesota, January 13, 1866. This antedates the Scotch operation, and the patient appears to have been in a more deplorable condition—if this were possible—than the other, in view of the condition of the nose and patellæ." The operation in Dr. Muller's case was done for frost-bite, on the nineteenth day; the tip of the nose had perished, and the patellæ subsequently exfoliated. "The probable inability to use artificial limbs is a misfortune that gives to the American a very different termination from that of the British case. This same case—the American—was also briefly published in 1867, on pp. 522, 523 of the 'Catalogue of the Surgical Section of the Army Medical Museum.'"—*Philadelphia Medical Times.*

Cholera in Russia.—The paper read by Dr. Mouat at the last meeting of the Epidemological Society on the subject of cholera in Russia advocated the view that Asiatic cholera has become endemic in St. Petersburg. He believes that no fresh importation of poison is necessary to explain the frequent recrudescences of the disease there. The sanitary condition of St. Petersburg is very disgraceful to an advanced civilization like the Russian. A soil so saturated with sewage that Dr. Mouat described the city as almost floating upon a bed of sewage; the excrementitious matters from houses discharged into porous cesspits, whence the liquid portions permeate the surrounding earth, and find a way into the canals which intersect the city; the canals so full of filth that the authorities are afraid of disturbing it and raising a pestilence; and no system of drainage or of pure-water supply—these things make St. Petersburg an excellent bed for the naturalization of the Asiatic plague. The worst of it is, that Russia will not suffer from these conditions alone. Cholera is more likely to reach the cities of Western Europe from St. Petersburg than from the banks of the Ganges.—*Medical Times and Gazette.*

Remenstruation by the Breasts at Advanced Age. — Dr. Tueffard relates the case of a lady, aged fifty-six, in whom menstruation had ceased at the age of fifty, without any disturbance of the health ensuing. Four years since she had a superficial ulceration of the os uteri, which soon yielded to treatment. In November, 1871, the breasts became large and firm, with projecting nipples, whence a fluid—at first serous, and then of a bloody color—was discharged. This discharge continued for about eight days, when it gradually ceased, to reappear again in a month, accompanied with cephalalgia, loss of appetite, and swelling of the breasts. Down to the present time it has continued to reappear every month with almost an exact regularity, the patient being aware of its approach almost as surely as a young woman is of that of her menses. During the intervals the breasts become again flaccid. There is no uterine disease, and in other respects her health is quite good.—*Union Médicale*, November 30, 1872.

Disgraceful Conduct of Medical Students.—A Montreal correspondent of the Toronto *Globe* says: "The medical students at Victoria College, Montreal, are becoming the disgrace of the city, and are reported to be completely beyond the control of the professors. A few days ago a party of them stole a body from their own dissecting-room, took it to McGill Medical College, received their price, and had a drunken spree on the proceeds. Since then they have been accused of stealing, in broad daylight, a corpse from the Hôtel-Dieu, their own hospital, only dead a few hours, and unburied, of taking it to a college and selling it, and spending the money in a similar way."

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Original Communications.

ART. I.—*Report on the U. S. Pharmacopœia.*[1] By EDWARD R. SQUIBB, M. D., of Brooklyn, N. Y.

To the Medical Society of the State of New York:

As chairman of the delegation sent to represent this Society in the Decennial Convention for the revision and publication of the U. S. Pharmacopœia—which convention met in Washington, in May, 1870—it now becomes the duty of the undersigned to report that the revision and publication of the U. S. Pharmacopœia have been completed; and to present a copy of this new fifth revision to the Society for preservation in its library.

In presenting the completed work, it may be useful to the Society, and is necessary to the writer as one of the Society's representatives in the matter, to direct attention to some prominent points in the new Pharmacopœia, and to ask the earnest, thoughtful attention of the profession to this important subject. If the medical profession does not advance with the rapid progress of other departments of human knowledge and skill, its useful results will be proportionately small, its influence for good will be more and more weakened, and its ranks be more and more demoralized by error and schism. In its struggle for life, inherent strength alone can secure the "survival of the fittest." In order to advance with the rapid progress of other knowledge, it must adopt all the means necessary to that end, and therefore must attain a much higher degree of accuracy in observation and research, as well in the objective as in the subjective branches of medical science.

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[1] Read before the Medical Society of the State of New York, February 5, 1873.

Medical science, as a department of physical science, is thoroughly objective in its character, and very simple and direct in its design, and is of established value and importance; and, if physicians would but take the example of other physicists in the precision and accuracy of their investigations, their ranks would become more orderly and compact as their results became more definite and certain. The element of primary importance to accuracy in observation and research is quality, or greatest attainable perfection in the instruments of investigation. The telescope and spectroscope, the galvanic battery, and the lever and axle to other physicists, fairly represent the materia medica to the physician. And, if the materia medica be not improved in accuracy, precision, and uniformity, as the telescope, spectroscope, and microscope are, the observations made through its agency must continue to be indefinite and uncertain from this cause, and can never rise to the dignity or utility of accurate research.

The new Pharmacopœia having been received within the two weeks just past (February 1, 1873), your reporter can offer but an imperfect and hasty review of it. Nothing can be said as the result of trial and experience of its new processes, and all that is here written is offered as the mere individual judgment of the writer, made up somewhat hastily, but not carelessly. Where this judgment is at variance with that of the Committee of Final Revision and Publication—a numerous committee whose high character is well known—the writer is fully sensible of the weight against him, and of the well-earned advantage such a committee must always have in the minds of careful readers.

In making a report at this time, rather than at the annual meeting a year hence, only a few prominent points can be touched upon in detail; but, it is hoped that even this may not be without use in awakening a new interest in the materia medica, and in attracting special attention to the new Pharmacopœia.

The mechanical execution of the book leaves nothing to be desired. The paper, type, printing, and binding, are highly creditable, both to the committee and to the publishers, and partly justify the increased cost of the book. Both the book and the printed page are slightly larger than the last, but, the type being smaller, though perhaps equally clear, the pages contain very much more matter. Hence, the book with some one hundred and nine additional articles, and twelve dismissed, is still sixteen pages less than the last, or the difference between 383 and 399 pages. The work of the publishers' proof-reader is well done, only one single typographical error having been noticed—namely, on page 125, where "platinum oil" is printed for "platinum foil."

As the convention did not at its last session, as it did at the previous one, direct that the copyright revenue be expended in cheapening the book to the public, but directed that the expenses of the committee should be paid from it, the public has now a better book. It is highly probable that the income from the copyright of the Pharmacopœia might be greatly increased by offering it to the competition of several publishing houses, and all the income which could be thus obtained might be most wisely expended upon—and would most likely pay for—all the expert labor involved in the work. When your reporter served as your representative in this committee in 1860, several respectable New York publishing houses applied to him to have the copyright opened to competition, and given to the highest bidder, and your reporter urged upon that committee both the propriety and justice of this course; but the proposition met with neither favor nor support, and was promptly voted down. The committee, however, decided to seek some information from the publishers bearing upon the value of the copyright; but the publishers declined to furnish the information, because it was connected with their business affairs, and the committee was satisfied with this refusal. It was because of such action as this being not infrequent during the two years' deliberations of that committee—and not from an indisposition to work, and to tell freely all he knew, and to travel a hundred and eighty miles a week to do it—that your reporter persisted in refusing to serve upon the present committee—the committee being substantially the same as the preceding one.

The Pharmacopœia begins with the "Proceedings of the Convention of 1870 for revising the Pharmacopœia. Fifth Decennial Revision." And there is no improvement in the meagre and insufficient abstract of the proceedings of this convention which gives to the work its organic existence and authority. In order that this feature might be improved, the convention directed its secretary to employ a stenographer; but the secretary reported that a stenographer could not be had in Washington at that time. The "Proceedings," however, could have been much improved without a stenographer, if only by the publication of the Report of the Committee of Revision and Publication for 1860—short and meagre as this was for so important a work. In the "Proceedings" it will be seen that the convention discussed the general principles, and adopted a general plan, for the new Pharmacopœia, and then, as usual, appointed a Committee of Final Revision and Publication to carry out the plan thus adopted. Among the resolutions which form this plan for the new Pharmacopœia, as adopted by the convention, for the governance of its Committee of Final Revision and Publication, is the following:

> "*Resolved*, That measures of capacity be abandoned in the Pharmacopœia, and that the quantities in all formulas be expressed both in weights and in parts by weight."

This resolution, with the others which constitute the plan of the convention, was brought in by a committee of five prominent delegates, and was drawn up in the interest of an important degree of progress in precision and accuracy, which had already been attained in the same way by other national Pharmacopœias. The resolution was freely discussed by the convention, and the practical difficulties, and the labor involved in carrying it out, were fairly pointed out and urged, and were fully considered, and the convention deliberately decided that the advantages to be gained in accuracy and precision would be a true progress, and worth the labor involved; and, after this full discussion, the resolution was adopted by the convention.

This action of the convention was considered by the writer, and by others familiar with the subject, as one of the most important steps that could be taken in a general plan to bring the Pharmacopœia up to the date of its revision; and accordingly, when the new issue appeared, this improvement was looked for, but looked for in vain, for the measures of capacity and the weights of the old issue were found unchanged.

The reasons why the Committee of Final Revision and Publication refused to carry out the directions of the convention in this resolution are given in the preface of the Pharmacopœia as follows:

"To execute such directions, entails the use of a metrical system not employed in this country or in England, and which would have to be constructed for the purpose. Such a change would involve changed proportions in almost every formula, and would produce a corresponding disturbance in many of the doses. Moreover, such directions were not anticipated in any of the revisions handed to the committee; and to institute such extended experiment as would cover the whole ground of the directions of the Pharmacopœia, would entail so much expenditure of time, labor, and cost as to render the plan impracticable. This view of the question was unanimously taken by the committee at a meeting consisting of ten members."

These reasons will have more or less weight as they may be viewed by different persons from different points of view. But, how any reasons, whatever, can justify a committee in refusing to carry out the deliberate directions of the superior authority by which the committee was created, must be generally difficult to comprehend.

To the perhaps prejudiced judgment of the writer the reasons given appear to be those of a committee which did not like labor, and therefore refused it upon whatever pretext could be found. This, however, fails to account for the action of the committee when it is considered that the time and labor involved were mainly of a mechanical and clerical nature, and might have been hired for the purpose, since the whole value of the copyright of the Pharmacopœia was available, by authority of the convention, to satisfy the cost of revision; the committee-men in this, as in all past revisions, generously contributing their own time and labor entirely without cost to the work.

This much-needed and expected improvement in the national Pharmacopœia is, therefore, lost for the next ten years, unless the committee should see fit to avail itself of the authority given by the convention to issue another revision prior to that of 1880.

The Preface is well and forcibly written, and gives a concise account of the prominent features of this revision. The following admirable paragraph will, doubtless, commend itself to all:

"In accordance with the resolutions of the convention, the 'scope of the work has been extended rather than abridged;' and it has been the desire of the committee to adapt it to the wants of our extended country, without losing sight of the conservative character necessarily pertaining to a national Pharmacopœia. Such a work must necessarily follow in the wake of advancing knowledge; it is no part of its mission to lead in the paths of discovery. It should gather up and hoard for use what has been determined to be positive improvement, without pandering to fashion, or to doubtful novelties in pharmaceutical science."

It is, however, unfortunate that an important proportion of the present revision does not correspond to the precept so clearly set forth in this paragraph; as, for example, the introduction of glycerin into thirty-four of the forty-six fluid extracts.

In the summary account of the one hundred and nine additional articles introduced, an excellent opportunity for courtesy if not justice to the British Pharmacopœia was lost, since that standard has been so largely drawn upon by the committee as in some instances to follow its defects, while its advantages are generally improved upon.

The Preface concludes with a very slight allusion to the amount and importance of the labors of the committee, which, though quite proper and entirely consistent with the high character and good taste of the gentlemen concerned, conveys to the ordinary reader no just conception of either the character or the amount of work involved in the duties accepted by them in the interest of their professions.

The Preliminary Notices of the Pharmacopœia are found unchanged.

Under the caption of "Temperature," the term "gentle heat" is still defined, while the similar conventional terms "moderate heat," "regulated heat," etc., are still left without definition.

Under the caption "Stoppage of Bottles" it is still insisted that the words "well stopped" whenever they occur must be translated into "glass stopped;" a mode of expression which takes no more words than that for which it is substituted, while it is certainly more clear and definite. The whole force of this Preliminary Notice is that the words "well stopped" must be read "glass stopped" throughout the Pharmacopœia; but the committee itself seems to forget this, and directs two out of the three collodions p. 117, and all the tinctures p. 299, to be kept in "well-stopped" bottles. In the case of the collodions the direction is not simply unnecessary, but will commonly result in the gluing fast of the glass stopper.

The supposed defects of these two captions were brought to the notice of the committee, but without effecting a change.

Percolation, as described in the Preliminary Notices, is substantially unchanged, and the reader might infer that a lapse of ten years had left this important process without noticeable advancement. This, however, is not the true position of the committee, for, on referring to p. 151, a general formula for percolation in its application to the fluid extracts is found in detail. This formula is a modification of that published by Mr. Samuel Campbell, of Philadelphia, in the *American Journal of Pharmacy* for 1869, p. 385, and for 1870, p. 17. By this process Mr. Campbell claims that the medicinal properties of drugs can be practically extracted by a proportion of menstruum, or solvent, much smaller than that indicated by any previous experience. Hence this process attracted the immediate attention of many who were engaged upon the important class of preparations to which it was applicable. The writer, among others, applied it with care, and with that prejudice which is apt to be excited by propositions which, by largely saving labor and expense of material, greatly increase pecuniary profits.

The process in the writer's hands was, however, not favorable in the character of the result. The exhaustions were found to be very inaccurate and imperfect, while these imperfections were often masked by the character of the menstruum employed, and by the deceptive appearances of richness of color and density in the products. Saving of labor and increase of profit naturally hide many defects, and the process soon became popular, though occasionally discredited by pharmacists whose closeness of observation entitled their judgment and their results to respect. This process of Mr. Campbell the committee has adopted, but with the important modification that, whereas Mr. Campbell claims to have his sixteen troy ounces of the drug fairly represented in the first sixteen fluidounces of percolate, and therefore percolates no farther, the committee continues the percolation to twenty-four fluidounces, and evaporates the ten fluidounces last received to two fluidounces, and adds this to the fourteen fluidounces first received. This is a most important advance upon Mr. Campbell's method, but yet, in the writer's experience and judgment, the committee's process is very inadequate, and does not represent the knowledge on this subject at the date of its action.

The Primary and Secondary Lists have been enriched by twenty-seven articles, and would not have been at all impoverished, to say the least, by the omission of an equal number, yet only five articles were dismissed. That view or plan of "extending rather than abridging the scope of the work" which forbids the dismissing of such articles as Absinthium, Allium, Althea, Cataria, Coccus, Hæmatoxylon, Matricaria, Salvia, Sambucus, Santalum, and Statice, from the Primary List, together with most of the articles of the Secondary List, does not seem to the writer to be in accordance with the condition of medical and pharmaceutical science at the date of this committee.

The committee of 1860 ventured so far as to dismiss thirteen of the ancient incompetents of the Secondary List; but the present committee, unable to withstand this sacrifice, have restored two articles then dismissed, as "Substances added to the Materia Medica of the Pharmacopœia." These are the Flesh-colored Asclepias, and the Syriac Asclepias. What these particular "milk-weeds" have done for the materia medica within the past ten years your reporter does not know. The only other addition to the Secondary List is Castanea. As far as the name is concerned, this also is a restoration. But, in reality, the Castanea dismissed by the committee of 1860 was the bark of the C. pumila or Chinquapin, while the Castanea now added is the leaf of the C. vesca, or common chestnut. This has, within the past ten years, been occasionally noticed as an efficient remedy in whooping-cough.

The other additions to these Lists, which are only restorations—or the undoing of what the former committee did—are the readmission of Cinchona, which was dismissed as a useless generic name, since all the useful varieties were separately described; the readmission of Conium Seed or fruit, which the committee of 1860 made a great blunder in dismissing; and the readmission of Origanum, which, if important now, this importance has escaped notice in the current literature of the past decade.

A very important advancement has been made by the committee in the direction of greater precision of language in the officinal description of drugs. What, at first sight, would appear to be but a mere change in the form of expression, or a mere multiplication of words, or technicalities, upon closer inspection exhibits a far deeper meaning, and will contribute much toward precision and accuracy. As an illustration of a change, which, though apparently trivial and useless, is yet not so in reality, the word "saturation" has, throughout the book, except in two or three instances, been changed for "neutralization." When it is remembered how the word "saturation" is now applied in chemistry, the change will not appear trivial. On the other hand, the word "sufficient" seems to have found an Anglo-Saxon disfavor that is really trivial. With the exception of a few instances, where the enemy must have been napping, it is ruthlessly eliminated, in favor of the word "enough;" but this only in certain positions of the phraseology, for, in the expression "a sufficient quantity," which occurs so much more frequently, it triumphantly holds its place.

The descriptive notes of characteristics and tests, appended to the articles throughout the book, are much improved and extended, and those applying to articles newly introduced are as full and as effective as is practicable. The only serious error in these is under the article Acidum Carbolicum Impurum, p. 11. On next to the last line of the page it is stated that this substance "should not be soluble in less than 20 per cent. of water, thus indicating that it is not an alkaline solution of carbolic acid." This is probably intended to be Crooke's test, which is, in effect, that it should not be soluble in less than five times its volume of water. Besides the extension in both the definitions and notes, several errors of the previous Primary List are corrected in this new List.

At the outset of this Primary List is noticeable the most conspicuous and most general of all the changes made by this committee. This is the change in nomenclature which, as the Preface states, has been made "in order to place the work in accord with the progress of chemical science."

Here the effort to hold back, and to be conservative, and yet to go on a little, very carefully, seems to have led the committee into a jumble in which chemical science could see no accord. The frequent use, in the same paragraphs, of the old and new nomenclatures, often in their most abrupt contrasts, produces upon the writer the effect of a harsh discord, and must prove to be confusing to physicians and pharmacists; while to those familiar with the new nomenclature the effect must be absurd. This jumble, which pervades the whole book, has its culmination in such names as "Tartrate of Antimony and Potassium." Nowhere is true conservatism more valuable than in an authoritative standard which should govern the every-day practice of arts so important as medicine and pharmacy; and the frequent apparent success of ill-judged, half-way measures, adopted under the name of conservatism, shows how great a load of error can be carried by the little giant truth. If this partial change proves to be an error of judgment of the committee, a weakening of the influence of the Pharmacopœia is to be feared as a consequence. Within the sphere of the Pharmacopœia, the new chemical nomenclature may be considered to be pretty well settled for the next decade, and it would have been a manly policy for progress, to have adopted it entirely until a better one might be developed. It has been well said that the workers in the fields of natural science must hold their facts and occupy their positions as the nomadic Arabs do their tents, in readiness to pick up and move on at any time; and, if this be true, it indicates that neither the new nomenclature nor any other can be stable for the future, and that the question of stability need not therefore have embarrassed the committee, to prevent it from taking an advanced position for its decade. On the other hand, the committee might—certainly with safety, and probably more wisely—have decided to retain the past nomenclature for another decade, until the committee's constituency might, from other sources, have become more familiar with that advanced knowledge of which the new nomenclature is but the natural language. But, to adopt neither, yet attempt both, impresses your reporter as a grave error of judgment.

After this great change in nomenclature, it seems puerile to refer to others which, but for this, would be very conspicuous. The words "folia" and "leaves," which ten years ago were changed to "folium" and "leaf," so as to be in harmonious uniformity with "radix," "root," "semen," "seed," etc., are now changed back again to the plural, while "almond," "cubeb," "fig," "nutmeg," "bone," "egg," "prune," etc., are retained in the singular. The words root and bark are omitted from the English translation of many of the officinal titles, and we now read "Quercus alba, white-oak. The inner bark of Quercus alba." "Rubus, blackberry. The bark of the root of Rubus Canadensis, and of Rubus villosus;" and "Apocynum cannabinum, Indian hemp. The root of Apocynum cannabinum." This brings them into harmonious accord or uniformity with "Cinchona," "Ipecacuanha," "Jalap," "Valerian," etc., but the changes do not appear to advantage when, in the subsequent formulas, we read "Take of Blackberry, in fine powder;" "Boil the White-oak," etc. In "Slippery-elm bark," however, the word "bark" is retained in the English name, probably through oversight. The change, or rather the exchange of the names of the officinal alums, seems to have been unnecessary, and, if so, is unfortunate and bad, since it introduces confusion while in no way promoting accuracy, and simply caters to a common usage which is based upon inaccuracy. The name alum was not commonly applied to any thing but potassa-alum until after ammonia-alum had been more cheaply made from gas-liquor. Potassa-alum has always been the type and file-leader of the class of alums, as ethylic alcohol is of the class of alcohols, until the committee degraded it and promoted its younger usurping competitor. Had the committee promoted fusel oil, or glycerin, to the name of "alcohol," and degraded ethylic alcohol to the ranks in chemistry, rating it by its chemical constitution simply, this would have been but an exaggerated instance of a similar change. All the past medical reputation of "alum" belongs properly to potassa-alum, the ammonia-alum being comparatively untried till introduced into the last British Pharmacopœia as "Alumen," to the exclusion of potassa-alum.

A general view of the next subdivision of the Pharmacopœia, and the most important part of it, namely, the "Preparations," shows it to be, except in the points already noticed, mainly unchanged. The same array of long and yet insufficient, and now also long obsolete, formulas for Calomel, Cinchonia, Quinia and Morphia salts, etc., is still found, though the advisability of transferring all such to the Materia Medica List, with appropriate descriptions and tests, has been long and earnestly urged by many competent judges here, and has been illustrated by the example of foreign Pharmacopœias. It is really very difficult to know where to draw the line between processes appropriate to practical pharmacy and those which are not; but it must be drawn somewhere by the authority of the Pharmacopœia, and to do this with the least practical inconsistency is what should be aimed at. Hypercriticism never ends, and can neither be well defined nor avoided; but, to refuse logical inferences, and resist reasonable conclusions on account of this, cannot be wise.

It is to be regretted that saffron, an excellent corrigent and stomachic, is omitted from such preparations as vinegar of opium, tincture of rhubarb and senna, and compound tincture of cinchona. The general appreciation of its value, in the latter preparation especially, will not be likely to support this change.

An error in the process for vinegar of squill, which was pointed out soon after the revision of 1860, and has been repeatedly noticed by various authorities since, remains uncorrected, although the process has been rewritten by this committee.

The process for purified chloroform has been rewritten and considerably changed, and the standard of purity has been lowered from "s. g. 1.490 to 1.494" to "1.480." Perhaps, all that the writer should say, in regard to this change, is to enter an earnest protest against lowering the standard; and that, from a considerable experience in the purification of chloroform, the old formula was a very good one, and the changes entirely unnecessary.

The officinal dried alum is now directed to be made from ammonia-alum; the maximum temperature is lowered from 450° to 400°; and the dried ammonia-alum is left with more water in it than the dried potassa-alum, formerly officinal. These changes are taken from the British Pharmacopœia, and therefore the committee adds that high authority to its own against the individual judgment of your reporter.

The process for benzoate of ammonia is taken nearly *verbatim* from the British Pharmacopœia, but the appended descriptive note is much more full than that of the British Pharmacopœia. The reasons for the introduction of this article into the Pharmacopœia are not known.

Bromide of ammonium, p. 83, is an important addition, and the process appears to be a very good one as an outline for any one who wants to make it. The last paragraph on the page is not clear—or at least is not understood by the writer—for, if no greater precision is attained than that indicated in the process, there will be more than two-tenths of a grain of moisture left in the salt, and then the seventeen grains of nitrate silver will decompose the whole of the bromide, and the further addition of nitrate-of-silver solution will cause no cloud.

Purified chloride of ammonium, p. 84, is also a useful addition, but the process is defective in adding the water of ammonia to a hot solution of the chloride, and in continuing the heat before filtration. Upon the large scale, at least, this does not accomplish the object, and the preparation will not, in a large majority of instances, stand the test by tannic acid, as given in the paragraph of tests.

Iodide of ammonium is another important addition.

The article on valerianate of ammonia, p. 85, has been rewritten with no perceptible advantage; but the note of description and tests, which is far more important, and is deficient in not identifying the separated acid, is unchanged.

In the process for oxysulphuret of antimony, p. 88, 7th and 8th lines from the foot, the phraseology is changed decidedly for the better.

Under carbonic-acid water, p. 90, an important paragraph is added to prevent insidious contamination with copper and lead, though the tests given would detect these metals as well as others if present.

Under water of ammonia, p. 91, the phraseology is altered for the worse on the 15th and 17th lines from the top, since, if the phrase be grammatically construed, the "glass tube," and not the distant "two-pint bottle," is described as containing the water. Such points, however, would be surely hypercritical, except when they are the only changes, and changed from a better phraseology to a worse.

Creasote water, p. 94, should be filtered through a *wet* filter to prevent the passage of oily particles.

Under distilled water, p. 95, the new Pharmacopœia adheres to the phraseology of the old, where the direction is, to "distil two pints, using a tin or glass condenser, and throw them away." Query, what is to be thrown away? This peculiar phraseology was pointed out to the committee, so that it must be concluded that they consider it correct as it stands.

The processes for subcarbonate and subnitrate of bismuth, pp. 103, 104, are somewhat changed and much improved in several points.

The process for animal charcoal, p. 109, is amended materially by the direction, before omitted, to "heat it to redness, and, when cool, keep it in well-stopped bottles," but, unfortunately, this important amendment needs further amendment, for, unless the words "out of contact of air" be added after "heated to redness," the charcoal may be burned up.

The name of "Ceratum adipis, cerate of lard," is now changed to "Ceratum, cerate," p. 109. And Unguentum adipis, ointment of lard," to "Unguentum, ointment," p. 326. At the last revision, these were, with rather doubtful propriety, changed from simple cerate, and simple ointment, to lard cerate, and lard ointment. But now, apparently to get them into harmony with "Syrupus, syrup," and "Mel, honey," they are again changed, so that the adjective, or qualifying, or class distinction of the name, stands by itself. But, as the other parallel class distinctions, such as decoction, infusion, solution, spirit, tincture, etc., could not with propriety be used in this way, the discord is still as great as ever. The physician, who follows the Pharmacopœia, but sends to a pharmacist who does not know it critically, may have his prescription returned to him as incomplete. The change seems altogether uncalled for, unnecessary, and unwarranted.

The class "Chartæ," comprising two articles, is new. All the blistering and mustard papers now commonly used are, so far as your reporter's information and inquiries go, untrustworthy, and, where such things fail, valuable time is often lost. The cantharides paper is taken, with slight modification, from the British Pharmacopœia; and the mustard paper is probably that of Mr. Crew, or something like it. If from these sources, and materially modified, the modifications may make them keep well, as the original preparations do not. At best they may be best classed with those "doubtful novelties of pharmaceutical science" which the Preface tells us the Pharmacopœia should not pander to.

The Pharmacopœia cannot be followed in keeping two out of the three collodions, p. 117, in "well-stopped," that is glass-stoppered bottles, unless an almost impossible degree of care be taken not to get the collodion upon the neck of the bottle or stopper to glue the latter in. A cork, when glued in, can be dug out in pieces and a new one substituted; with glass this is more difficult.

The previous errors in the process for the confection of senna are properly corrected, and the formula and process are now unexceptionable.

The formula and process for digitalin are introduced with slight modification from the British Pharmacopœia.

In the officinal names of several of the alcoholic extracts, the characteristic word "alcoholic" is left off, as in those of aconite, arnica, colocynth, digitalis, etc., thus making the names harmonize with those of the watery extracts, while they are really equally alcoholic with those of belladonna, conium, and hyoscyamus, where the word alcoholic had to be retained to distinguish between the more feeble watery extract of the fresh plant and the stronger alcoholic extract of the dry plant. Even to physicians and pharmacists, who are pretty well educated in the materia medica, this distinction has not been fully learned and appreciated in the past, and, now that a new and serious element of confusion has been introduced, it will be fortunate if grave mistakes do not occur.

Extract of American hemp is introduced, and is, so far as the writer knows, entirely new to the professions of medicine and pharmacy. A single monograph, written by Dr. H. C. Wood, Jr., of Philadelphia, contains all the knowledge on the subject; and, adopting the principle laid down in the Preface, the new Pharmacopœia follows in the wake of this single beam of "advancing knowledge," to gather it up and hoard it for use.

The formula for compound extract of colocynth is very much improved by taking purified aloes and an increased proportion of cardamom, but is still defective in mixing the separate powders instead of combining them by heat so that the soap, resins, and aromatic, may unite and form a compound rather than a mixture.

The extract of jalap, p. 143, still contains the expensive, inert, useless, and very troublesome watery extract, which more than ten years ago was taken in boluses large enough and repeated often enough to determine its character, and that by one of the members of the present committee. The committee seems persistently to refuse this as "advancing knowledge;" but in the parallel case of the extract of podophyllum, p. 146, gives a very much improved formula and process excluding this watery extract.

The extract of Calabar bean, p. 145, is an important addition, but the substance is taken in too coarse a powder, and the exhaustion is insufficient.

Under the important sub-head of fluid extracts, a model process of percolation is first given. At the last revision model processes were rejected, first, upon the ground that in a book of reference, like the Pharmacopœia, each article referred to should be found complete; and, again, as a more intimate knowledge of the characteristic peculiarities and differences in drugs was obtained by investigation and experience, it was considered that no model process could be equally applicable to any considerable number of substances. Increasing knowledge and experience seem to have justified these conclusions of the last committee, yet the present one has reversed the action.

The revision of 1860 contains 25 fluid extracts, all of which are retained in this revision except that of conium. Of the 24 retained, 10 contained sugar. This ingredient proved objectionable in practice, and the writer among others soon found that where sugar was desirable glycerin was far better, and these results were freely published, and glycerin was fully tried, though not always with the expected advantages. Nevertheless, wherever sugar had been considered indispensable, there seemed no doubt but that glycerin was better, and the writer everywhere advocated the substitution, but never its extension to other fluid extracts. Within the past two years, the practice of pharmacists and the usage by physicians both seem to indicate that, where glycerin is not absolutely necessary, it is objectionable. Such views are, however, not accepted by this committee, for, in following out their modification of Mr. Campbell's plan for the officinal fluid extracts, they have not only substituted glycerin for the sugar in the 10 old fluid extracts which contained sugar, but have introduced it into 7 of the remaining 14 old fluid extracts after ten years' experience had proved it unnecessary, leaving now only 7 of the original 24 without it. Then the committee introduce 22 new fluid extracts, 17 of which contain glycerin, thus making a total of 46, of which the large proportion of 34 contain glycerin. This new officinal feature will not probably be generally followed and should not, and the Pharmacopœia will have to be satisfied with that degree of loyalty which adopts its now uniform strength for fluid extracts whereby each minim represents a grain of the drug from which it is made. Some other curious changes are unaccountably made in both old and new fluid extracts whose present value has been long established.

The process for tartrate of iron and potassa, p. 178, is not corrected, and it is therefore still impracticable.

Citrate of iron and strychnia, p. 179, is a new article of some importance, and the process seems to be a good one.

A new class of glycerites, p. 187, is introduced apparently from the British Pharmacopœia, since four of the five are found in that work. This may prove to be a useful class of preparations for external application.

In the formula for yellow oxide of mercury, there is an error which defeats the process, and yields oxychloride. The quantity of solution of potassa should be twenty-five troy ounces, instead of seventeen, p. 193.

Aconite liniment, p. 205, is also a useful addition, but it is in reality a fluid extract both in mode of preparation and in strength, and why it should be introduced here, as a liniment, it is difficult to understand, unless it be to secure it against internal administration. If this be the reason, it is not a good one, for the Pharmacopœia cannot wisely undertake to legislate against mistakes by erratic names.

The errors of directing purified chloroform in the chloroform liniment, p. 207, and in the solution of gutta-percha, p. 215, are still retained, though a commercial chloroform is provided for external uses.

The formula and process for soap liniment, p. 207, are reformed and very much improved.

An important alternative process is given for solution of acetate of ammonia, p. 208, which must prove to be a great advantage as well as a convenience, since it will always be freshly made as dispensed. It might have been wisely substituted for the old process.

A solution of chloride of iron, p. 211, is introduced, which is but the first part of the old process for the tincture of the chloride of iron, and then this solution is directed, at p. 208, to be used in making the tincture. This is simply making two preparations out of one, and, if the intention be to keep the materials separate, and make the tincture as wanted, it is a mistake, because the older the tincture is the better, on account of the reactions which take place slowly for the production of an ether which is important to the preparation.

The process for solution of citrate of iron, p. 212, is rewritten, and materially improved.

The one-grain solution of sulphate of morphia is still retained, while an officinal formula for Magendie's solution is still refused. If local usages are to be provided for in simple solutions, both should be supplied. If confusion and mistakes are to be avoided, both should be excluded, and be left to magistral prescription.

The process for chloride of zinc, like that for tincture of chloride of iron, is divided into two, and a solution of chloride of zinc is introduced at p. 223.

A citrate of lithia is very properly introduced, and by a good formula.

The processes for the oleo-resins are all rewritten, and improved; and a new one, oleo-resin of fern, meaning male-fern, is introduced.

Under the sub-heading of pills, p. 241, the Pharmacopœia is made again to depart from the admirable precepts of its Preface, and to illustrate how different it is, and how much more easy, to know a thing to write it, and to know a thing to do it. It cannot be too often quoted that the Pharmacopœia "should gather up and hoard for use what has been determined to be positive improvement, without pandering to fashion, or to doubtful novelties in pharmaceutical science."

Now, it is stated here as a mandate of this highest authority in the nation, that "the practice of sugar-coating pills is approved in reference to pills which are expected to be slow in their operation, but is of doubtful propriety in regard to those intended to act quickly, as the coating retards the solution of the pill-matter in the liquids of the stomach." When the Pharmacopœia thus goes half-way over to the wholesale pill-makers, the first question is, as to whether sugar-coating be a positive improvement which should be gathered up for use. If it be so, then the question of "pandering to fashion, or to doubtful novelties" in the drug-trade—for this is not pharmaceutical science in any sense—does not come up? If it be true that medicines commonly go into an empty stomach, and that when the organ is empty it is but a quiescent portion of the intestinal canal which would at once pass a bland, unirritating particle, like a sugar-coated pill, through the pylorus, the question of sugar-coating being a positive improvement must be considered as decided in the negative. But there is another aspect to this subject, which is of greater importance. Is the medical profession ready to hand over to the tender mercies of competing tradesmen another important class of medicinal agents, with the full knowledge that in so doing they must of necessity lose all check and control over it, and therefore must abandon all notions of precision and accuracy. In these cases we cannot afford to wait for evolution to determine the survival of the fittest, for the faithful manufacturer who may use the best materials and put on the most soluble coat with greatest skill cannot sell at the same price or profit as his less faithful competitor, nor can he spend so much upon agents and advertising; and, the landmarks of quality being all removed, the whole question is left open to that most precarious of all testimony, namely, individual judgment based upon casual observation.

Such changes as that made in the alums, the lowering of the specific gravity of chloroform to the trade standard, and this partial approval of sugar-coated pills, subject this committee to the charge of concession to the unsafe interests of trade in matters of vital importance.

The formulas for pills have all been rewritten with much care by a practised hand, without material change in proportion or dose, and are made to apply to small quantities applicable to the wants of dispensing pharmacists, so that they may always be comparatively fresh and soft. This, to a certain extent, obviates the necessity of adding glycerin to the formulas, to keep the pills from becoming hard. The tone and tendency of these changes is quite in opposition to the indorsement of sugar-coated pills, and will go far to induce the dispensing pharmacist to make his pills for himself. And, if this be skilfully done, there is no necessity whatever for sugar-coating. It is to be regretted that this practised hand, which worked out these formulas, did not add the direction that pills should be kept in bottles.

The matter upon p. 249, of the pills, seems to be out of its proper alphabetical order, without any other discoverable reason than that the masses are not divided into pills as all the others are. This dislocation, however, renders these formulas liable to be lost when sought for by alphabetical order.

The processes for two of the resins are rewritten, with great improvement and advantage.

The British Pharmacopœia process, sometimes known as Redwood's process, for spirit of nitrous ether, is adopted instead of the old one. The writer has never tried this process, but feels confident that an error is involved in the use of sulphuric acid and copper. It is, however, much more certain that a grave error has been made by the committee in the quantity of stronger alcohol taken, and the quantity of the resulting product. Had the committee copied their authority more literally, they would have escaped the great blunder of making seven or eight pints of the spirit from "four troy ounces and a half" of nitric acid. These proportions yield a preparation of about one-fourth the strength it should be, and must be, in order to answer the requirements of their note of tests. The writer having made thousands of pounds of this preparation with great success by the old formula, and repeatedly upon the scale of the Pharmacopœia, is at a loss for any reason for this change in this important preparation.

In the formula for suppositories of lead and opium, the oil of theobroma is left out, p. 287.

Heat is still very mistakenly insisted upon in the process for syrup of iodide of iron, p. 291.

Tincture of aconite-leaf is dismissed, though called for perhaps quite as often as many of the articles introduced, while it must necessarily be kept by the pharmacist, to fill those prescriptions which call simply for tincture of aconite.

Notwithstanding all that has been written at home and abroad, the committee seem to be only one-quarter converted to the advantages of the dried, unripe fruit of conium over the leaf. They advance so far as to admit the fruit, and make the fluid extract from it; but still make the extract, alcoholic extract, p. 138, and the tincture, p. 307, from the leaf; and besides, introduce a bad new preparation, juice of conium, which they also make from the leaf. Why they refuse such authority as Dr. John Harley, of London, especially as it is supported by abundant testimony at home, your reporter cannot understand.

In the troches of bicarbonate of soda, nutmeg is found in the formula, but not in the process. Which is in error?

In a new preparation, ointment of cantharides, introduced at p. 328, is a curious instance of novelty. Two cerates are mixed, and called by the committee an ointment. How the mixing can change and reduce the consistence, as implied in the name, is difficult to understand.

The old defective process for acetate of zinc is abandoned, and a good process is adopted in its stead.

The tables usually found at the end of the preparations, giving a summary account of all the changes made, are increased in number by one; and six new tables of weights and measures have been added. These give the officinal and metrical systems, and their common and most useful relations to each other, and their approximate equivalent values. In giving the value of the gramme in grains, the later and more correct determinations are not accepted by the committee. The equivalent given by Gmelin, "Handbook," p. ix., from authorities of that date, is 15.44242 grains. This determination was subsequently corrected to 15.4346, and again to 15.4340 as given in the U. S. Dispensatory. But the value generally accepted at this time, as the result of greater precision in the weighings, is 15.4322 grains, as determined by U. S. authority in the Bureau of Hydrography in Washington. The new Pharmacopœia gives 15.434.

The convention of 1860 directed that the Index of the

Pharmacopœia should "have its names so marked for the quantity of the syllables that it may serve as a pronouncing vocabulary of the materia medica." This was well done by the former committee, and your reporter can attest the utility of such a standard for reference, to correct the many common errors of pronunciation against which this provision was made. It is to be regretted that the present committee did not allow this index to stand, even with its very few doubtful renderings. At the present revision, the index is merely accented, thus leaving the *c* and *ch* to be rendered either hard or soft though the *g* is marked, and leaving the vowels entirely unmarked for quantity.

In a retrospective view of the materia medica for the past decade, it will be seen that the number of articles proposed and used, and the voluminous and inconsistent testimony in regard to them, are unprecedented; and hence it must appear, to the most casual observer, that the work of the committee in selecting articles for admission was unusually difficult and laborious. This difficult work the committee has accomplished with a judgment so generally good that exceptional instances become the more conspicuous. As an instance of this exceptional character, they introduce the hypophosphites, now pretty well worn out, and pretty generally rejected, though still possibly entitled to the place; but reject pepsin, which stands so very much in need of a pharmacopœial description and tests.

Your reporter here gives up the disagreeable and tedious labor of having so much of this important national standard to object to. It is a work at which he hesitated and halted, and it never would have been undertaken but from a sense of paramount duty. He therefore begs a few words of personal explanation in concluding the disagreeable task.

Let no man infer from what has been here written that the writer places himself in an attitude of hostility to the United States Pharmacopœia; or that he in any degree withdraws any part of the influence he may be able to exert from earnestly supporting it. On the contrary, if he knows his own position in the matter, it is that of unchanged, honest, earnest fidelity to the National Standard, and unchanged disposition to work for its improvement.

ART. II.—*On Ovariotomy.*[1] By J. MARION SIMS, M. D., one of the Surgeons to the New York State Woman's Hospital, etc., etc.

MY fourth case by drainage was remarkable on account of the number of physicians she had consulted—in all, fourteen or fifteen.

Miss ——, aged thirty-nine, had always enjoyed good health till about a year ago, when she noticed some enlargement of the abdomen, which she thought was the result of her climacteric period. The abdomen continuing to enlarge, she consulted Dr. Hurlbut and Dr. Hoyt, of Stamford, in March last, who discovered that she had an ovarian tumor. In April she saw Dr. Willard Parker and then Dr. Thomas, and then Dr. W. T. Walker, afterward Dr. Chapman, of Brooklyn, and Dr. Kimball, of Lowell, all of whom recognized the true nature of her disease. Up to this time her health had been perfect; but on the 25th of April she had an attack of peritonitis, was exceedingly ill for about six weeks, and did not leave her room till July. I saw her at Newport early in August, and a few days afterward she was suddenly seized with an attack of peritonitis in the left side of the abdomen, which lasted a week.

She measured thirty-seven inches around the abdomen, and was losing flesh rapidly. She was exceedingly anxious for the operation, and it was done at Newport on the 25th of August. Prof. Mussey, of Cincinnati, Prof. Johnston, of Baltimore, Dr. Bailey, of Albany, Dr. Neftel, of New York, Dr. Sands, of Newport, Dr. Nichols, of Boston, Dr. Cahoon, of Vermont, and Drs. Walker and Cleveland, of the Woman's Hospital, were present. Harry Sims gave nitrous-oxide gas. The adhesions between the peritonæum and the tumor were very intimate, and the sac was so unusually thin that I opened it accidentally and prematurely. Having done this, I proceeded to empty its contents—about thirty pounds of chocolate-colored fluid—before breaking up the adhesions. These, not easily separated, were found everywhere anteriorly and laterally. There were also adhesions to the sigmoid flexure and the left broad ligament.

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[1] Concluded from December number, 1872.

The parietal peritonæum was deeply congested and showed signs of the recent severe attacks of peritonitis and oozed out bloody serum in abundance from the abraded surfaces. The sac was enucleated from the pedicle, which was very short and broad. This was tied in two segments by two figure-of-8 silver-wire ligatures, cut off and then dropped in the pelvic cavity. Some small vessels were tied with cat-gut, and the cavity was carefully cleared of coagula and bloody serum. The Douglas *cul-de-sac* was then punctured with a curved trocar from the pelvic cavity through into the vagina, and a drainage-tube of India-rubber was passed from the vagina up through this puncture into the pelvic cavity, and brought out at the lower angle of the abdominal wound. All that portion of the tube that lay in the peritoneal cavity and in the vagina had perforations or fenestræ on opposite sides, about a half-inch apart, for the purpose of spontaneous drainage through the vagina. The portion that passed out at the lower angle of the abdominal wound was intact and long enough to fall over the pubes and drop between the thighs. The body was thus traversed by this tube, one extremity projecting from the vagina, the other above the pubes. The operation lasted forty-eight minutes. Perfect anæsthesia was kept up for fifty-one minutes. On coming from under the influence of the gas, she complained of such agony in the region of the wound that I gave her one-sixth of a grain of morphia by the skin, in fifteen minutes one-quarter of a grain, and in another fifteen minutes another quarter of a grain, before she became tranquillized. I have seldom seen any one so excited on the eve of an operation. Her pulse was 120 before the operation, and the same immediately after it, but with the third dose of morphine it fell to 108.

The operation was completed at 12 o'clock, and at 1.40 P. M. a napkin was saturated with bloody serum drained from the peritoneal cavity by the vaginal end of the tube. She was quiet, and comparatively free from pain, but had some nausea; reaction complete.

4.40 P. M.—Some nausea and vomiting. Takes pounded ice. Gave one-quarter of a grain morphine by the skin.

6.10 P. M.—Pulse 106; nausea and occasional vomiting; skin warm. Just removed the third napkin saturated with bloody serum since she was put to bed six hours ago.

9 P. M.—Perfectly free from all pain. Slight discharge from the drainage-tube. Drew off one and a half ounce urine. She says morphine always arrests its secretion.

11 P. M.—Pulse 104.

August 26th, 8 A. M.—She had a quiet and rather comfortable night. Six ounces urine drawn off at 4. Pulse 112. Complaining now of pain. Gave one-quarter of a grain morphine hypodermically. Hardly any drainage by the tube during the night. Injected four or five ounces of warm water through the tube, which was at first reddish, but soon passed clear.

8.30 A. M.—Six ounces urine drawn.

11.20 A. M.—Complains of increasing pain in lower part of the abdomen. One-quarter grain of morphia by skin.

12.30.—Found napkins much soiled with a dirty, brownish, inodorous, watery discharge. Pulse 112; temperature $101\frac{2}{10}$°. No nausea and no vomiting in the last twelve hours. Six napkins in all have been soiled by the drainage in the twenty-four hours since the operation. The first three with reddish serum, the others are of a dirty, yellowish-brown color, all of them thoroughly moistened, and perfectly inodorous.

2.40 P. M.—The napkin applied at 12.30 now thoroughly saturated with reddish serum. Pulse 116; very little nausea; some pain and considerable restlessness.

5 P. M.—Some pain. One-quarter grain of morphia.

8.40 P. M.—Pulse 112; temperature $101\frac{1}{2}$°. Hardly any drainage in the last four hours. Injected a little warm water through the tube.

August 27th, 4 A. M.—Much nausea, pain, and restlessness. Till now has rested and slept well during the night; removed napkin well saturated from drainage-tube. Pulse 124; one-quarter of a grain of morphia hypodermically. A little fluid issues from the upper end of tube, from lower end it is quite profuse.

4.40 A. M.—Removed another napkin thoroughly saturated. Pulse 116.

9.45 A. M.—Pulse 120; nausea and restlessness; one-quarter of a grain of morphia by skin.

10.30 A. M.—Pulse 120; temperature $101\frac{6}{10}$°. The discharge from both ends of the tube very great; three or four good-sized napkins saturated in the last two hours. The discharge may be said to be inodorous, and yet it has a faint, sweetish odor, *sui generis*, and is a little sticky to the touch. It is of a brownish, muddy color, perhaps it would be more appropriately termed chocolate-colored. No vomiting since about twelve hours after the operation; but occasional nausea, which soon passes off; slight pain in the right iliac region.

1 P. M.—Pulse 128; temperature $101\frac{4}{10}$°. The pulse is the only indication of danger. The temperature, condition of the skin, and expression, are all good. Has had a dozen napkins soiled with the drainage in the last twenty-four hours.

2.45 P. M.—Washed out peritoneal cavity with warm water injected through the tube. Pulse 128 before the injection, 120 immediately after it.

4.40 P. M.—Pulse 132; temperature $101\frac{8}{10}$°. Drainage still going on. Injected eight ounces of warm water through the tube, as much more into the peritoneal cavity by a catheter passed in by the side of the drainage-tube. It passed through quickly and of an amber color, with a few flakes of lymph in it.

7.30 P. M.—One-quarter of a grain of morphia by skin.

9.30 P. M.—Pulse 120; temperature $101\frac{6}{10}$°. Washed out peritoneal cavity; injected six ounces of water through the tube, and ten by the side of it by means of a gum-elastic catheter, which was passed down five or six inches into the peritoneal cavity. Most of it passed out by the abdominal end of the tube, but little by vaginal.

11.40 P. M.—Pulse 116; sleeping.

August 28th, 2.30 A. M.—One-quarter of a grain of morphia.

9.30 A. M.—Rested and slept well during the night; now complaining of pain; gave one-quarter of a grain of morphia. Has had a copious discharge from both ends of the tube during the night. Fifteen good-sized napkins have been thoroughly saturated since mid-day, yesterday. Pulse 112; temperature 101°.

2.40 P. M.—Free discharge of chocolate-colored serum by upper end of tube, with sediment of same color. Injected a pint of warm water through the tube and by the side of it. A large quantity of sedimentary, chocolate-looking fluid flowed out through the upper end of tube; one-quarter grain of morphia by skin. Pulse 112; temperature 101.

4.10 P. M.—One-eighth of a grain of morphia by skin.

7.20 P. M.—Rather restless; pain in lower part of abdomen; washed out the peritoneal cavity, and she felt better after it. Gave one-quarter of a grain of morphia.

11.20 P. M.—At last visit removed the old drainage-tube and introduced a new one, which seems to be doing better; free discharge below as well as above; some soreness in epigastric region.

August 29th, 3.30 A. M.—Free discharge from both ends of the tube. Two napkins saturated since last note.

8.20 A. M.—Free discharge by both ends of tube, and from the vaginal end it is thicker and darker-colored than at any time before.

10 A. M.—She is suffering a good deal of pain. Has taken no nourishment to-day; feels weak and exhausted; a sense of faintings and distress in epigastric region. Whines and cries like a starved baby. No discharge since last visit; washed out peritoneal cavity. Not much coloring matter in the water as it passes out. One-quarter of a grain of morphia, and ordered nourishment and brandy. Pulse 112; temperature $101\frac{2}{10}$°.

12 M.—Increased restlessness. Pulse 110; one-quarter of a grain of morphia. Within the last two hours has taken cream, beef-juice, and champagne, freely.

1.30 P. M.—Discharge by tube pretty free, and is thicker than at any time before. It looks like chocolate-paste, or the muco-fecal stools of an infant; inodorous. Washed out peritoneal cavity. Pulse 110; temperature 101.

4.40 P. M.—Very severe pain in lower part of abdomen; one-quarter of a grain of morphia.

6 P. M.—She began to complain of severe pains in the lower part of the abdomen, of an intermittent, spasmodic character, very much like labor-pains. The discharge by the tube was thick and pasty; and to this fact, and to the partial ob-

struction of the tube, these bearing-down pains seemed to be due. At times she screamed out so loudly with the pains as to alarm the inmates of the house. Dr. Cahoon gave her one-quarter of a grain of morphia, and sent for me, and when I arrived at 7 P. M. I repeated the dose. The pains were like those of labor. Thinking the tube was possibly compressed at its passage through the vaginal *cul-de-sac*, I concluded to remove it for the purpose of enlarging this opening. I attached a long silver wire, doubled, to its lower end, and drew the tube out at the abdominal opening, leaving the wire in its stead, to serve the purpose of drawing another tube through when necessary. When the tube was removed I found its fenestræ obstructed with gelatiniform secretions. The opening in the abdomen, and the one in the *cul-de-sac* of the vagina, seemed to compress the tube, and, in a measure, to impede the flow through it; so I concluded to enlarge these two openings.

9 P. M.—Harry Sims gave her nitrous-oxide gas, and I removed the lower suture and broke open the abdominal wound, so as to admit the end of the index-finger. I then tried to enlarge the opening in the *cul-de-sac* of the vagina, but it was not so easy as might be supposed. Indeed, it was very difficult. The opening was so small that it was not easy to find it. After incising it bilaterally, and making it large enough to admit the end of the index-finger, I expected to pass the finger freely into the peritoneal cavity, and to sweep it round behind the uterus. But this was not the case; instead of entering freely into the peritoneal cavity, I was greatly surprised to find that the finger entered only a narrow canal, along which I forced it with the greatest difficulty for an inch and a half or more. This canal seemed to be formed of fibrinous bands that had completely capsulated the drainage-tube. After this opening was enlarged, I passed a gum-elastic catheter through it into the peritoneal cavity, and about four and half ounces of clear reddish serum were drained off. I was surprised at not getting a larger quantity after enlarging the two outlets. Hence the operation was useless, and I regretted afterward having subjected my already-exhausted patient to such a severe ordeal. The gas, which she inhaled

resistingly, the operations, and the fright she got into, seemed to be a dreadful shock to her, for her pulse went from 116 at 9, up to 130 at 11 o'clock P. M.

August 30th, 8.15 A. M.—Under the influence of morphia she had a quiet night's rest. The tube has discharged freely, and she is completely exhausted. She is taking brandy and beef-tea freely, and this morning she chewed a little beef-steak.

Dr. Cahoon gave one-quarter of a grain of morphia at 8—the only dose since 10 o'clock last night. Pulse 132. Washed out peritoneal cavity. Got a large quantity of flocculent, brownish sediment out of it. Attached a Davidson syringe to upper end of tube and sucked up from the cavity an ounce or more of thick, chocolate-colored sediment. When the vaginal end of the tube projected from the vagina, air passed freely through the tube, and the peculiar chocolate-looking paste was easily drawn up by the syringe. But when the lower end of the tube was crowded into the vagina, and the vulva closed, so that no air was admitted, I could draw nothing whatever with the syringe from the peritoneal cavity by the upper end of the tube; and why? Because the suction-power only drew the soft parts in contact with the tube into the fenestræ, and hermetically closed these little openings.

This also proved that there was no large amount of free fluid in the peritoneal cavity, at least along the track of the tube.

11.20 A. M.—Washed out peritoneal cavity again. Pulse 128; temperature 102°.

1.30 P. M.—The dirty, chocolate-colored discharge very free since last visit, especially by lower end of tube. Patient imagines it has more odor than before, but I do not discover it. One-quarter of a grain of morphia.

4.45 P. M.—Discharge by lower end of tube freer than it has ever been. Has had no colicky pains since last night's work. Washed out cavity. Large quantities of brownish flocculi in the water. Pulse 128; temperature 102°.

7 P. M.—One-quarter of a grain of morphia.

8.40 P. M.—Discharge very copious in the last four hours; contains less of the chocolate-colored sediment. Pulse 130; temperature $102\frac{2}{10}$°.

12 N.—Continued discharges from lower end of tube, with decidedly less coloring-matter than at any time before. One-quarter of a grain of morphia.

August 31*st*, 8.30 A. M.—Slept very well last night. Discharge very profuse, and almost wholly by vaginal end of tube. No longer any brownish, chocolate-colored masses, but simply a dirty serum. Washed out peritoneal cavity. Pulse 120; temperature 101½°.

12 M.—Feels quite exhausted, and says she thinks the profuse discharge from the peritoneal cavity is the cause of the exhaustion, but on inquiry I find that the nurse has not comprehended instructions about giving nourishment and stimulants. She has been giving them by the teaspoon, when tablespoonfuls was the order. A more generous diet was immediately ordered. Pulse 128; gave one-quarter of a grain of morphia, and washed out the peritoneal cavity. The discharge is a dirty, muddy-looking serum, without the chocolate-colored sediment. For the sake of experiment, I concluded to remove the tube for a while; so a silver wire was hitched on to its vaginal end, and the tube was drawn out above, leaving the wire in its place. In addition to nourishment by the stomach, ordered beef-tea and brandy by rectum.

4.40 P. M.—Not much discharge by vagina, considerable by abdominal opening. Pulse 136, with greater evidences of exhaustion, although she has been taking more nourishment than at any time since the operation. Convinced that it would not be safe to leave the tube out any longer, it was hitched on to the wire and easily replaced.

5 P. M.—Pulse 136; temperature 101½°. One-quarter of a grain of morphia.

9.20 P. M.—Discharge by lower end of tube very profuse, very little by the upper end. Pulse 128; temperature 101½°.

September 1*st*, 8 A. M.—Rather a bad night. Discharge from lower end of tube very free, comparatively nothing above. Pulse 128; temperature 101$\frac{4}{10}$°.

September 2*d*, 1 P. M.—One-quarter of a grain of morphia.

September 3*d*, 8 A. M.—Has had a bad night. Refused to take morphia since 1 o'clock yesterday. Had diarrhœa and griping pain in bowels all morning. Has a splitting headache, talks wildly, and imagines all sorts of things. I explained to her that she had an attack of delirium tremens from the too sudden suspension of the use of the morphia, and I begged her to allow me to give her an hypodermic dose; gave nearly one-half of a grain. Pulse 120; temperature $100\frac{6}{10}$°.

10 A. M.—Found her quiet and rational. Washed out peritoneal cavity. Water brought away only a few darkish, mucous-like flocculi, as it has done for the last two or three days.

Nothing can be more irksome than daily reports such as I have given above. But I have chosen to do so that others may draw their own conclusions from the history and facts of the case. It is unnecessary to continue them further. For the successful management of the case I am indebted to Dr. Nichols, of Boston, who left his home and remained by the bedside of my patient, in Newport, for more than three weeks. We came near losing her. As Mr. Spencer Wells would say, she barely "pulled through." When the operation was performed I said to the gentlemen present: "Cases like this where there are such extensive adhesions, and such an amount of bloody oozing, almost always die. But in this instance the bloody serum will be drained off as fast as it is exuded, and our patient will recover." Her recovery was slow and tedious, but she is now in good health. The drainage-tube was worn for about a month. I must acknowledge that there is some doubt in my mind as to the proper time for its removal. I am sure it ought to have been removed at least a week earlier in this instance.

For the fifth drainage case I am indebted to the courtesy of Dr. W. T. Walker, Assistant-Surgeon to the Woman's Hospital.

Mrs. Burley L., aged thirty-seven, married; had one full-term labor and five abortions before she was twenty-four years old. A year after the last miscarriage, say twelve years ago, she discovered some enlargement of the left iliac region, which gradually extended over the whole abdomen, and eventually it was necessary to tap it, when a large quantity of fluid was evacuated. It gradually refilled, and two years afterward it was tapped a second time, and in one year after this a third time. In ten months more she was tapped a fourth time.

Eight months after this it refilled again, but soon disappeared spontaneously, without any interference whatever. She was then free from all appearances of a tumor till about three years ago, when the right side of the abdomen began to enlarge, and has continued to do so till now the tumor occupies the whole abdominal region. During all this time the menses have been regular and normal in quantity.

She was admitted to the Woman's Hospital on the 4th of November, 1872. She measured forty inches in circumference, and the tumor was diagnosed unilocular ovarian cyst; and, as the general health of the patient was fair, it was pronounced favorable for operation. She had arrived at the period when it was necessary either to tap the tumor or to remove it. On due consideration, she selected the latter, and Dr. Walker performed the operation on the 8th of November. He made the usual incision, about three inches long, and, when he arrived at the peritoneal membrane, he found it everywhere adherent to the cyst anteriorly and laterally, and it was necessary to enlarge the incision. The adhesions were very firm and difficult to break up. After they were all separated, the cyst was punctured, and twenty-seven pounds of chocolate-colored, viscid, albuminoid fluid were evacuated. The pedicle (right) was enucleated from the cyst, and bled very freely. Two small vessels were ligated with cat-gut, and, as there was a good deal of bloody oozing from the enucleated surface of the pedicle, this surface was folded together longitudinally and stitched up with half a dozen turns of fine silver wire; the end of the pedicle was then transfixed with a strong silver wire and tied with the figure-of-8 loop. On searching for the left ovary, he found its place occupied by a flat, irregular-shaped body, some three or four inches long by about two wide, and a half-inch thick, having somewhat the color and appearance of a small pancreas flattened out. This was removed, and its pedicle ligated as usual with the figure-of-8 loop of strong silver wire. There were four small pedunculated fibroids on the fundus and posterior wall of the uterus, two about the size of filberts, and two not larger than English peas. Mr. Spencer Wells cautions against the temptation to interfere with such outgrowths. Nevertheless, these were removed; the peduncles of three were tied with very fine silver wire. A small one on the top of the uterus was twisted off, but the torsion did not prevent bleeding, and, after some delay, it was arrested by the actual cautery.

The peritoneal cavity was then cleared of coagula, and a puncture made in the *cul-de-sac* of the vagina for a drainage-tube. This part of the operation Dr. Walker kindly asked me to take charge of, and I alone am responsible for its bad performance.

When a puncture is to be made in the *cul-de-sac* for drainage purposes, it is reasonable that it should be made in the very lowest point of the pouch where the vagina and rectum are reflected from each other.

When my second case was operated on at Newport (page 606, December number, 1872), the two punctures were made at the lowest point. It will be remembered that the tube on the left side was displaced and then removed, and, when I attempted to replace it a few hours afterward, I found it impossible to do so, because the little puncture was made diagonally through the vaginal septum, and I could not find it. I thought at the moment, if it had only been made in the central part of the pouch up nearer the cervix uteri, that it would have been more easily detected.

Again, when I operated on my fourth case (page 360), the puncture was made at the lowest point just where the vagina is reflected from the rectum, and in this instance, when it became, as I thought, necessary to enlarge this puncture, I found that the anterior or vaginal portion of the *cul-de-sac* was firmly united to the posterior or rectal portion by a solid exudation of fibrin which formed a perfect tube or canal around the drainage-tube. Now, to avoid these accidental complications, I determined, in Dr. Walker's case, to make the puncture in the *cul-de-sac* high up in close proximity to the cervix, thinking that the uterus by its own gravity would sink to the lowest part of the pelvis, and naturally hold the vaginal wall and rectal wall of the Douglas *cul-de-sac* in close apposition; and thus, while the puncture would be at least two inches above the lowest point of the *cul-de-sac*, I supposed it would be virtually on the same level with it. In making the puncture I passed the trocar from above downward, instead of from below upward. The special reason for this was, that I intended to use a short silver tube, to be drawn into the *cul-de-sac* from the vagina. The trocar, like hospital instruments generally, was very dull, and, when I attempted to push it through the *cul-de-sac* from above against my left index-finger in the vagina, it unfortunately slipped a little, and passed through, not centrally, as I intended, but just to the right of the cervix and on a level with it.

I knew what had happened, but thought it would make no difference as to the consequences. The opening made by the trocar was too small to allow the passage of the silver instrument, so it was laid aside and a long caoutchouc drainage-tube was substituted for it. One end of the tube projected from the vagina, the other passed out at the lower angle of the abdominal wound, and hung down over the pubes. The peritoneal cavity being again thoroughly cleaned out, the abdominal incision was closed with the continuous silver-wire suture; the abdomen covered with cotton secured by adhesive plaster, and the patient put to bed. Dr. Baker gave ether. The operation lasted one hour and twenty minutes.

Before the operation, the pulse was 84; after it 96. She complained of pain, and Dr. Cleveland gave McMunn's elixir of opium by the rectum.

When the *cul-de-sac* of the vagina was punctured, and the drainage-tube introduced, some arterial blood flowed out by the vaginal end, but this soon ceased, and in two hours following the operation about eight ounces of blood and bloody serum (mostly blood) flowed out through the long abdominal end of the rubber tube into a vessel placed between the thighs. I am very sure that this was from the artery wounded by the trocar.

10 P. M.—A small quantity of bloody serum has passed by the upper end of the tube, none by the lower. Pulse 100; temperature $100\frac{3}{5}$°. Urine normal in quantity and appearance. Some pain and soreness in lower part of abdomen. No nausea; no vomiting. Skin warm. One-quarter of a grain of morphia by skin.

November 9th, 7.30 A. M.—Passed a comfortable night.

Pulse 104; temperature 99$\frac{2}{5}$°. Pulled the drainage-tube down so as to inspect the portion of it that lay in the Douglas *cul-de-sac*, and found it filled with coagula, which accounts for the blood and bloody serum passing out by the upper end of the tube last evening, instead of taking the shortest and most direct route out of the pelvic cavity.

2 P. M.—Washed out the peritoneal cavity by injecting water through the upper end of drainage-tube. It did not pass out by the vaginal end till the tube was moved up and down, and then it passed through, at first of a reddish tinge, and afterward quite clear. She complained of pain, and we gave one-quarter of a grain of morphia by skin.

7.40 P. M.—She is lying quietly and comfortably on the left side. Pulse 104. About an ounce of bloody serum has drained off by the upper end of the tube in the cup placed to catch it. No drainage whatever by the vaginal end, which is probably compressed where it passes through the puncture in the *cul-de-sac.* Pulse 100; temperature by vagina 102$\frac{2}{5}$°, by axilla 101$\frac{2}{5}$°; one-quarter of a grain of morphia.

November 10*th*, 7.40 A. M.—Pulse 94, full and strong; skin warm and soft; urine drawn last night and this morning normal. She asked for raw beef-steak, which was ordered for her. No discharge by either end of the drainage-tube.

11.30 A. M.—Pulse 96; temperature 100$\frac{4}{5}$°. The nurse left the room for a moment, and the patient got up out of bed and walked to the easy-chair, where she was found sitting quietly when the nurse returned and put her to bed again. This mad effort did not seem to hurt her in the least. It produced no particular pain, and her pulse was only 100 afterward.

8 P. M.—About a teaspoonful of dark, bloody serum has passed by the upper end of the tube into the cup, and a small quantity of reddish serum has passed by vaginal end. Washed out the tube by injecting warm water, which passed out below of a deep-reddish tinge.

November 11*th*, 5 A. M.—Has been sleeping; now complains of pain; gave one-third of a grain of morphia. Pulse 100; countenance anxious, breathing spasmodic; some nausea, with eructation of colored fluid.

8 A. M.—Pulse 104; temperature 102°; respiration 20;

voice feeble; skin warm; lying on right side. No signs of drainage from tube during the night. Washed out the vagina; it was full of reddish serum. Washed out the peritoneal cavity by a small gum-elastic catheter, which was passed in by the side of the drainage-tube to the depth of four or five inches. At first the water was of a deep-reddish tinge, but soon it passed through clear.

10 A. M.—Pulse 110; temperature 102°.

1 P. M.—Pulse 116.

2 P. M.—Pulse 124; temperature 102$\frac{3}{5}$°.

7 P. M.—Warm water injected by tube; passed at first slightly reddish, and then clear.

7 P. M.—Fifteen minims of Magendie's solution by skin. In the last three hours there has been a good deal of nausea and vomiting.

9.40 P. M.—Pulse 120, small; skin rather cool; respiration labored. She seems to have had too much morphine, but is not narcotized. Washed out vagina, which contained reddish serum; washed out peritoneal cavity, not only by drainage-tube, but also by gum-elastic catheter passed deeply into pelvic cavity by the side of the tube. Water passed out below quite clear. Epigastrium tympanitic. No tympanites in lower part of abdomen.

November 12th, 7.40 A. M.—Slept none last night. Had occasional vomiting. Had beef-tea and brandy by rectum. Pulse 128; not so much opiatized as she was yesterday morning; took only twenty-five drops McMunn's elixir of opium by enema during the night. No outward drainage by tube, but the vagina contained a quantity of reddish serum, which was washed out. Water thrown into the peritoneal cavity came through below quite clear. The inference was, that the reddish serum drained from the Douglas *cul-de-sac* into the vagina as fast as it was formed or reached that point.

12 M.—Pulse 136.

2 P. M.—Vagina contained a small quantity of reddish serum, which was washed out. The tube seems to drain the peritoneal cavity, for I always find a teaspoonful or two of reddish serum in the vagina, while water injected by the upper end of the tube passes out below quite clear. Notwith-

standing this evidence of complete drainage, her appearance is bad. Pulse 132; temperature 101°.

5 P. M.—Pulse 140; no vomiting to-day; temperature $102\frac{2}{5}$°.

9 P. M.—Pulse 112; washed out vagina; water reddish. Washed out peritoneal cavity. First syringeful reddish, the remainder clear.

November 13th, 7.40 A. M.—Rested well all night; found her fast asleep, lying on right side. Pulse 108; temperature $101\frac{3}{5}$°. Small quantity of reddish serum in vagina, giving a decided tinge to water injected into the vagina. Water injected into peritoneal cavity went through slightly tinged with red.

3 P. M.—Has had several loose passages in the last six hours. Has also vomited several times. Pulse 110. Ordered one-quarter of a grain of morphia, also brandy and beef-tea by enema.

5.20 P. M.—Still suffering a good deal of pain. Epigastrium tympanitic. Pulse 112.

8.30 P. M.—Pulse 116.

10 P. M.—Pulse 126, and very weak; breathing labored. Temperature $101\frac{4}{5}$°. Diarrhœa and occasional vomiting during the night, and she continued to sink, and died at 9.35 A. M., on the 14th, five days and nineteen hours after operation. Just twenty-four hours before death she had every appearance of recovery. Her pulse was 108; temperature $101\frac{3}{5}$°. She had passed a good night. Had a cheerful aspect, warm skin, normal secretion of urine, and some appetite. But all at once diarrhœa and vomiting set in, and in three or four hours she was prostrated to the point from which there was no chance of recovery. If there had been no *post mortem*, the hospital record would in all probability have terminated with the following entry: "Died of exhaustion." But a *post-mortem* examination was made by Dr. H. D. Nicoll, Pathologist to the Woman's Hospital, and he has furnished me with the following notes:

"*Post mortem* of Mrs. Burley L., made November 14, 1872, six hours after death.

"*Rigor mortis* well marked. Body and extremities considerably emaciated. Abdomen largely distended and tympanitic. The incision in the median line extending from just below the umbilicus to within two inches of the symphysis pubis had been closed by eight silver sutures. Union had taken place throughout the entire extent of the wound, except at the lower angle, where the drainage-tube had passed. Some folds of the small intestine and a portion of the omentum were attached to each other and to the walls of the abdomen by a very slight lymphy exudation which was easily broken up. The stomach and intestines, particularly the transverse colon, were greatly distended with fluid and gaseous products. The ovaries were absent, but their places were marked by the presence of pedicles ligated with silver wire. Uterus was slightly hypertrophied; the cavity measured three inches. An intramural fibroid the size of a small almond was found in its anterior wall, a little to the right of the middle line. The seat of three fibroids on the fundus and posterior wall of the uterus was marked by small loops of silver wire passed around their respective pedicular attachments. The seat of the fourth on the fundus was shown by discoloration of tissue made by the cautery. The puncture in the *cul-de-sac* of the vagina for the exit of the drainage-tube was made on a line with the os uteri and a little to the right of it.

“ The pouch between the bladder and uterus contained nearly an ounce of reddish serum. The pouch of the Douglas *cul-de-sac* contained nearly five ounces of deep-colored reddish serum. The Douglas *cul-de-sac* extended down between the rectum and vagina to an unusual degree. It ran down to within two inches of the perinæum, and was full of reddish serum. There was no other fluid exudation in any other portion of the peritoneal cavity.”

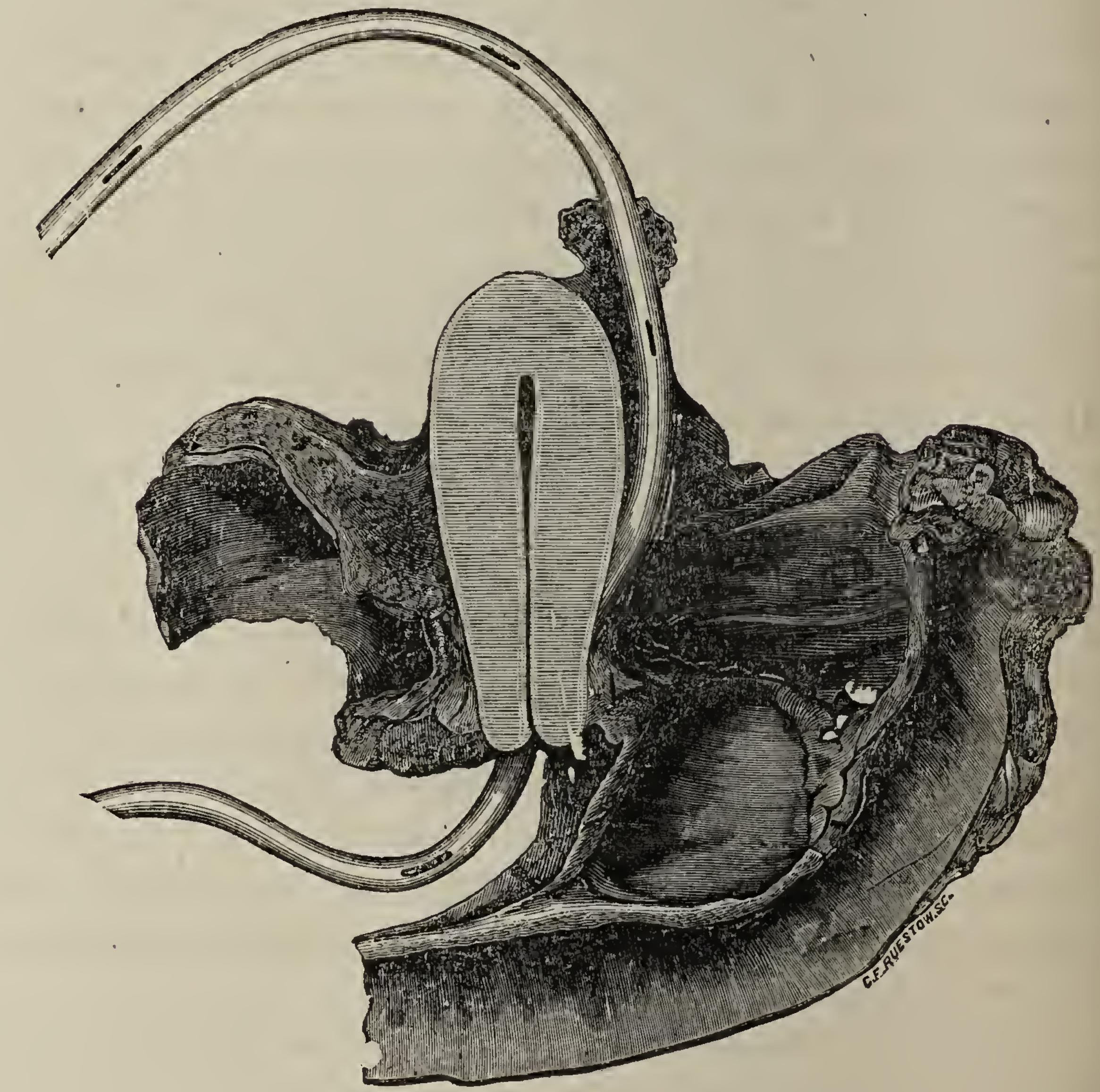
Fig. 1 was made from a photograph of a section of the parts removed by Dr. Nicoll. After the specimen had been in alcohol for five or six weeks, it was taken out, and the rectum, vagina, and bladder, were stuffed with cotton-wool, and allowed to harden in the cold. (If the weather had been warm, we would have placed it in a freezing mixture.) The cotton was then removed and the section was made. It is valuable only as showing the exact relations of the drainage-tube with the uterus and *cul-de-sac* of the vagina.

I sent the reddish serum, obtained at the *post mortem*, to Dr. Waterman for analysis, and he reported as follows:

"The red serum shows the absorption bands of blood between D and E of the spectrum when diluted with water. Left in the tube (used for the procedure) for several hours, these two lines disappear, and give room to the broad band of reduced hæmato-crystallin.

"Submitted to the microscope, the fluid contains a very large number of blood-corpuscles, more than is usually found in normal serum. These corpuscles have an unusually pale appearance. They are swelled up and look globular, with loss of discoid form. Besides these blood-corpuscles, we find floating a fibro-globous plastema in lumps, and also in delicately twisted, fibrillated, wavy curls. There are a number of nucleated cells having a dark appearance, which are most probably pus-cells. Vibriones and a very offensive smell point to putrefactive condition.

Fig. 1.

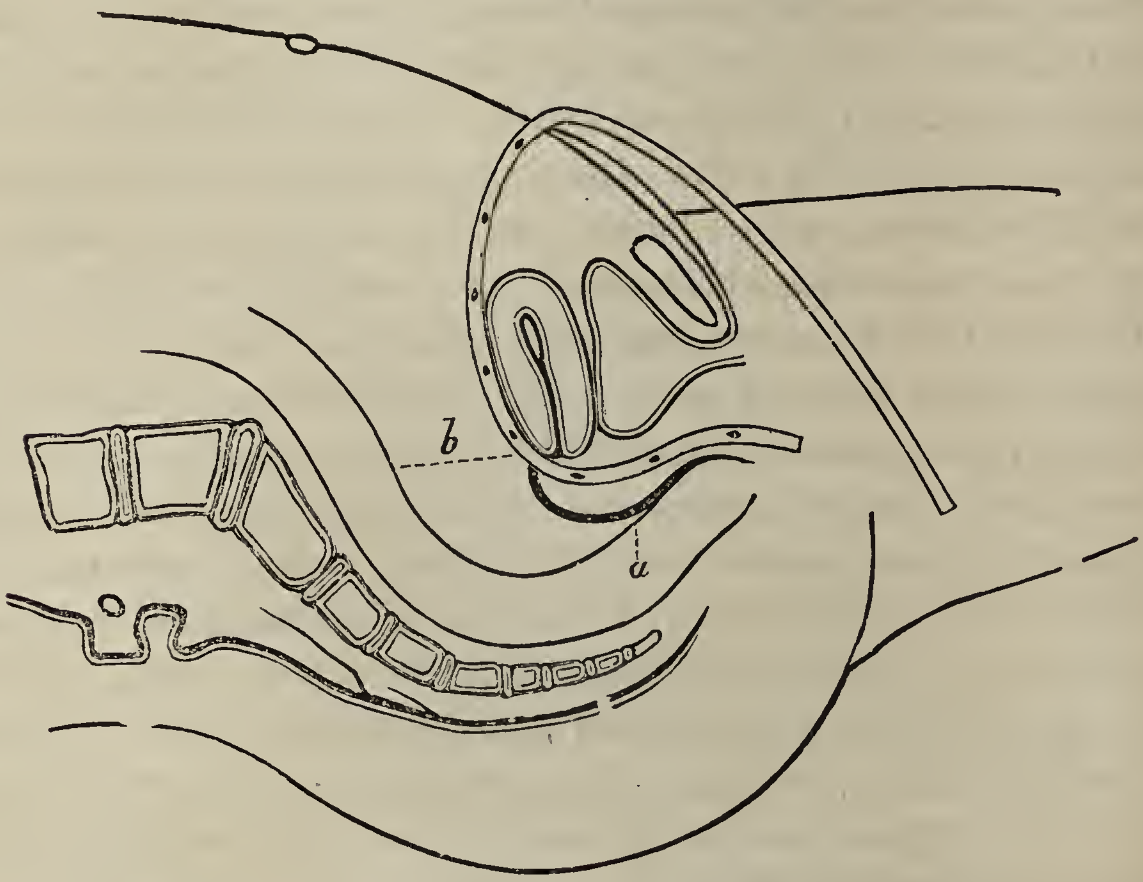


"That a fluid thus constituted, advanced to putrefactive activity, is able to form or to create septicæmic conditions, is of course conceded."

It is too often our habit to try to explain away the cause of death by some accidental complication, some neglect of the attendants, or some wilful disobedience of the patient. It would be very difficult to convince any of the nurses at the Woman's Hospital that this poor woman did not sacrifice her life by her own imprudence. She was a remarkable personage, and for this region a rare type of the human species. She was a mulatto, with straight hair, a cross between the negro and Indian. She was one of the most obstinate and self-willed patients I have ever had. This I attributed to her Indian blood. The day after the operation she got angry with the nurse, and, as I have said before, she rose from her bed and walked half-way across the room to the night-chair. She did this twice subsequently, the last time only thirty hours before death, when she fell on the floor and bruised her face, and the nurses declare that her death was produced by these violent acts of imprudence. But really they had nothing whatever to do with the result. Without a *post mortem*, many would say that she died of exhaustion following diarrhœa, and even with it very many would say the same thing. But it was undoubtedly a death from septicæmia, the source of blood-poisoning being the five or six ounces of reddish serum found in the Douglas *cul-de-sac*, and in the utero-vesical pouch. The absorption of this poison produced the diarrhœa, the exhaustion, and death. The notes of the case, as recorded above from day to day, went to show that the peritoneal cavity was well drained by the drainage-tube. Every day and at every visit we found a small quantity of reddish serum that had leaked through the drainage-tube into the vagina, there remaining till it was washed out by injecting warm water into the vagina; and then, when water was injected through the upper end of the tube, it passed out below, at first faintly tinged red, and soon it became clear; and again, when water was thrown into the peritoneal cavity by a gum-elastic catheter passed through the abdominal opening by the side of the drainage-tube, it passed out in the same way, at first slightly tinged, and then clear. The *post mortem* proves that all this was fallacious; that there was a part of the pelvic cavity in the Douglas *cul-de-sac* that lay below the level of the outlet by the drainage-tube, and could not, therefore, be drained at all or influenced in the least by any amount of fluid injected into the peritoneal cavity.

This may be better explained by the diagram, Fig. 2. Here the drainage-tube is represented as passing through the *cul-de-sac* of the vagina in contact with the cervix uteri instead of through the lowest point of the pouch, where the vagina and rectum are separated at *a*. If any fluid found its way into the pouch between the lowest point (*a*) and the imaginary line (*b*), it would remain there, because it was below the level of the outlet from the pelvic cavity by the tube. And this is exactly what we found in this instance. If the puncture had been made where it ought to have been made, at the lowest point (*a*), there is every certainty that the fluid found in this pouch would have been drained off, and, as a consequence, there is every probability that our patient's life would have been saved.

FIG. 2.



Instead of saying that she died in consequence of her imprudence in getting up and walking about the room, as the nurses believe, or that she died of exhaustion following diarrhœa, as the non-post-mortemist would say, let us place the blame where it belongs. She died of blood-poisoning from the absorption of a decomposed bloody serum retained in the utero-rectal pouch, because the puncture in the *cul-de-sac* for its drainage was improperly made. It is hard that life must be so often sacrificed to establish correct principles of treatment! While I lament and regret the death of our patient, I have great comfort in feeling that she has not died in vain; that her death leads to the establishment of a principle, so far as one case can do such a thing, that may be the means of saving, in time to come, valuable lives, and many, it is to be hoped, more valuable than this one sacrificed on the altar of science. The case as it stands proves more, I think, for the truth of my views than if she had recovered.

One important point, not to be forgotten, is this: The drainage-tube passed through an opening in the *cul-de-sac* that was smaller than the tube. Hence it was compressed at its point of exit from the pelvic cavity, and held tightly. When the tube was moved up and down by taking hold of its two extremities, and pulling first on one and then on the other, it would always pass along with a sudden jerk; the elastic tube would be thus put on the stretch, and, when it was let go, the two points of exit from the peritoneal cavity being fixed points, that portion of the tube between the abdominal and the vaginal openings would necessarily contract to its normal state, and thus, becoming shorter than when it was on the stretch, it would elevate the uterus and the vaginal portion of the *cul-de-sac* up in a line toward the abdominal opening, and thus enlarge the pouch between *b* and *a* where the reddish serum was found. The elasticity of the tube was thus mischievous in a marked degree.

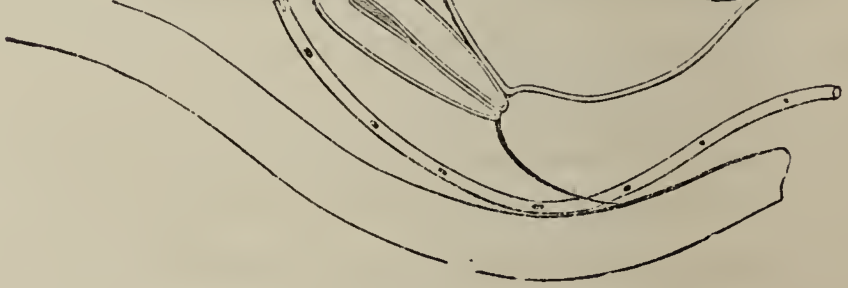
The great lesson from this case is, to make the puncture at the lowest part of the Douglas *cul-de-sac* at *a*. Another important lesson is in reference to septic fluids in the utero-vesical pouch. We found nearly an ounce of reddish serum in this pouch, and there was no possibility of its escape by drainage. In washing out the peritoneal cavity hereafter it would be well to pass, not a flexible gum-elastic catheter, but a silver tube through the abdominal incision down between the uterus and bladder, and forcibly wash out this pouch and overflow its contents (if any) into the Douglas *cul-de-sac.* This would be easily done by first introducing the index-finger into the vagina, and then passing the end of the syringe down into the utero-vesical pouch from above. The anterior *cul-de-sac* could be thrust upward by the point of the finger, and the fundus uteri thrown backward, thus making drainage from the utero-vesical pouch into the Douglas *cul-de-sac* very prompt and thorough.

This manœuvre becomes important, when we call to mind the fact that Mr. Spencer Wells reports a case dying of pyæmic poisoning, where the utero-vesical pouch was full of pus, while he had completely drained the Douglas pouch by a puncture through the vagina behind the cervix uteri.

Let us look back at these five cases, and, comparing the method of drainage in each, see how the question stands at this moment.

In the first case the puncture was made at the lowest point of the Douglas *cul-de-sac* just where the rectum and vagina separate, and a Chassaignac drainage-tube, about eight inches long, was introduced and held in place by a double silver wire, which was brought out at the lower angle of the abdominal incision. The tube was held in position by bending the ends

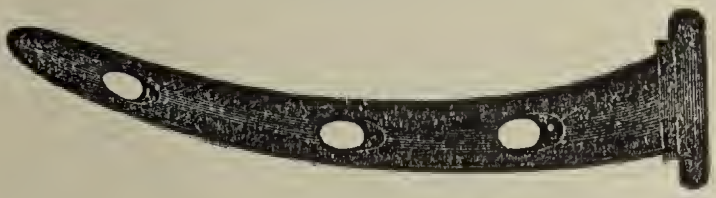
Fig. 3.



of the wires over each side of the abdomen. The part of the tube just within the vaginal *cul-de-sac* doubtless became surrounded by a coating of fibrinous exudation, for, on its removal, water could not be injected into the peritoneal cavity in a larger quantity than an ounce without producing some pain, and it would be thrown out in a jet, thus indicating that it was injected into a closed pouch, and not into the free cavity of the peritonæum.

This I did not understand at the time, but it was made clear in the fourth case. In my second case (the uterine cyst) there were two punctures made into the peritoneal cavity through the vaginal *cul-de-sac*, one passing also into the bottom of the uterine cyst behind the uterus. They were both made at the lowest point of the Douglas *cul-de-sac.* One tube slipped out, and I was not able to replace it. I did not use the caoutchouc elastic tube. I thought it would be enough to introduce a short tube of some hard substance that would be self-retaining. Accordingly, I had some tubes made of hard rubber about the shape of the cock's spur, and about two and a half inches long. The diagram represents the tube nearly of actual size and shape. It had three openings on each side.

Fig. 4.



The case reported shows that this contrivance was a failure, and that I was obliged to resort to the long Chassaignac drainage-tube.

My third drainage case was operated on only a few days after the second, and I was not then convinced of the utter uselessness of the above contrivance. In this case the cock-spur drainage-tube was used, and proved of no value whatever, for its fenestræ were obstructed by the lateral pressure of the parts in contact with it. When it was removed, about twelve hours before the death of the patient, a pint of reddish serum, more or less, passed out by the puncture which it had occupied, but there was more than twenty ounces of the poisonous fluid still left in the peritoneal cavity, and death was the result. In the fourth case the puncture was made in the lowest part of the Douglas *cul-de-sac*, and a drainage-tube introduced entirely through the pelvis, one end hanging out of the vagina and the other passing out of the abdomen at the lower angle of the abdominal incision, and then falling over the pubes.

On the fifth day I concluded that the tube was obstructed by a contraction of the punctured opening through which it passed into the vagina, and so determined to enlarge the opening. I was greatly surprised to find, when the opening was enlarged by incision bilaterally, that the finger could not pass into the peritoneal cavity, but entered into a dense, inelastic tube of well-organized fibrinous structure which had surrounded the drainage-tube for at least two inches. How much more it was impossible to determine. This fact, and the experience of the first case, determined me to make the puncture thereafter, not in the lowest part of the *cul-de-sac*, but as near the cervix uteri as it could be made, and with what result has already been detailed in the history of Dr. Walker's case, in which he so kindly allowed me to make the puncture. This case proves, beyond question, that the proper place to make the puncture is at the lowest point of the Douglas *cul-de-sac*, just where the rectum and vagina diverge from each other. While I am satisfied on this point, and while I am convinced more than ever that drainage should be made through the *cul-de-sac*, I am not satisfied with the *tube à drainage* of Chassaignac for the purpose. In Dr. Walker's case I attempted to introduce a self-retaining silver tube through the puncture in the *cul-de-sac*, but failed on account of the unfitness of the mechanical contrivances at hand at the time. If I had succeeded, I think our patient might have stood some chance of recovery, because the little tube would not in the least have disturbed the easy and natural relations of the boundaries of the *cul-de-sac*; whereas, with the Chassaignac tube, as already explained, the uterus was elevated and lifted up toward the abdominal incision, thus allowing four and a half or five ounces of reddish serum to settle down into the pouch below the level of outlet by the drainage-tube.

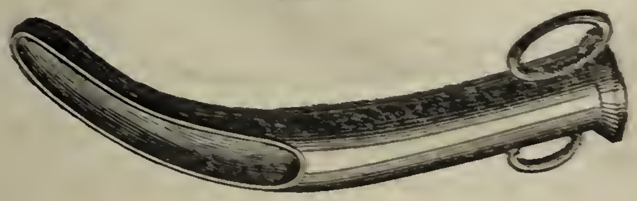
With the silver tube unattached by any contrivance above, the uterus would naturally have gravitated to the level of the lowest point of the *cul-de-sac*, and then the drainage might have been complete.

From the above it will be seen that I have had five desperate cases in succession. The first, second, and fourth, were evidently saved by the drainage system. No one who witnessed the operations thought it possible for either of them to recover. Nor do I believe their recovery would have been possible under other circumstances. The third case would, in all probability, have died even if the drainage had been good. But the cock-spur tube arrested the discharge from the peritoneal cavity as effectually as if the puncture in the *cul-de-sac* had been filled with a cork or any other solid substance. It is perfectly plain that the fifth case died in consequence of the imperfection of the drainage.

Again, let me repeat, I am convinced that the principle of drainage by the *cul-de-sac* of the vagina is correct; and that the outlet or puncture should be made at the lowest point of the Douglas *cul-de-sac*. But I am not satisfied with any method as yet adopted for drainage. Fearing that the ordinary caoutchouc tube of commerce contains some element that may be noxious in itself, I had some tubes made of pure black soft rubber. But they were too soft and too easily compressed to be depended upon.

I cannot give up the principle of a self-retaining tube, to be left in the puncture in the *cul-de-sac*. Fig. 5 represents a silver tube, about the size and shape of the instrument I have had made. The little rings on the vaginal end are for the purpose of preventing the instrument from turning on the side. It is large enough for a No. 4 or 5 catheter to be passed through it into the peritoneal cavity, and at the same time to allow a free return of water or other fluids from the cavity.

FIG 5.



Figs. 6 and 7 represent one and the same instrument: Fig. 6 the canula closed and ready for introduction; Fig. 7, its appearance after it is lodged in the Douglas *cul-de-sac*. To introduce it, a loop of wire twelve or fifteen inches long is passed through little holes in the end of the two blades; they are then closed and the wire is twisted tightly to hold them so; the *cul-de-sac* of the vagina is to be punctured with the trocar from above downward; the trocar is to be withdrawn, and then the wire attached to the end of the tube is to be passed along the canula till the point of the drainage-tube rests in the open end of the canula; pull the canula out, and at the same time draw the tube up through the opening in the vaginal *cul-de-sac*; then cut the wire loose from the tube, and the little rubber band at *b* will contract, and, as there is a pivot-joint at *a*, the blades will open, as shown in Fig. 7. Thus, it becomes a fixed, self-retaining instrument. To remove it, clip the rubber band *a* with a pair of scissors, and with a pair of common dressing-forceps it will be easily drawn out.

FIG. 6.

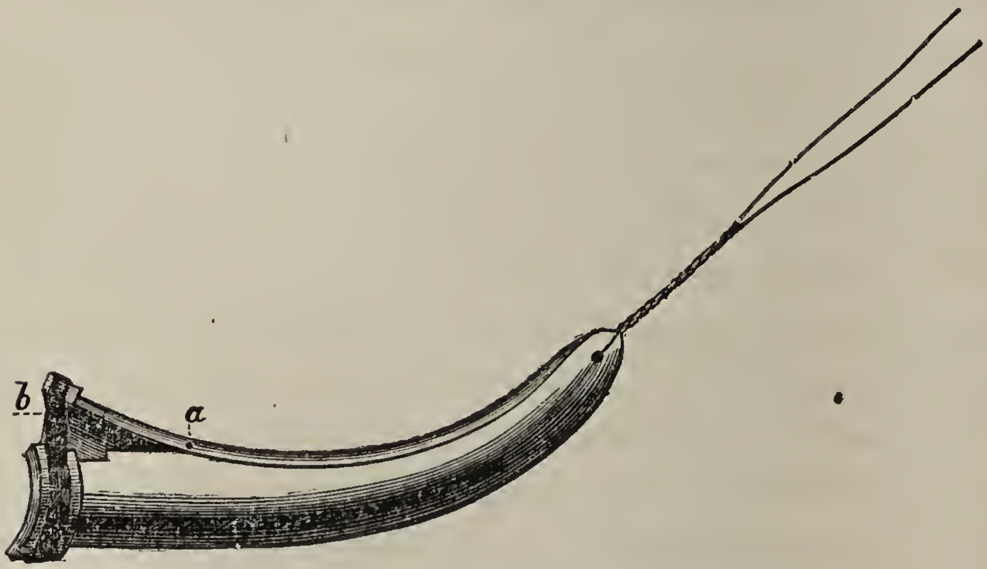
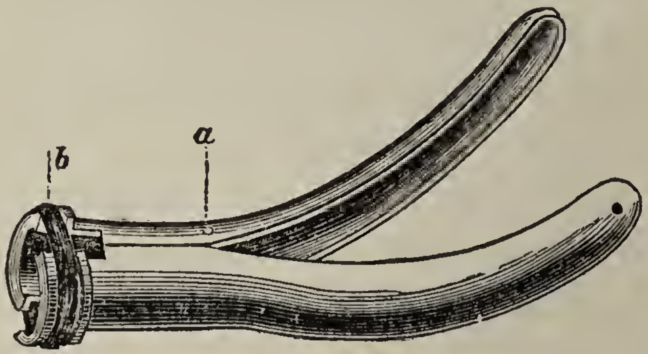


FIG. 7.



As yet I have had no opportunity of using either of these instruments, but I would prefer the one represented by Fig. 5, because it is simple and easily managed.

I do not pretend that the short drainage-tube would be of universal applicability. In cases like that described on p. 599 (December, 1872), the Chassaignac drainage-tube would be indispensable.

I do not expect the profession to accept my views all at once. It is very difficult, for those who have always believed that ovariotomy kills by shock and peritonitis, to turn suddenly to the belief that simple blood-poisoning is the cause and manner of death. It is the general belief that, when septicæmia causes death, it does so by a slow process, taking not hours, but days and weeks. It is impossible for such as hold these views to believe that it may kill in a few hours. Truth travels slowly, but surely. The medical scientists of England, France, and Germany, indeed of all Eurape, are now working out the great problem of blood-poisoning, and I feel sure that they will establish the fact that septicæmia, under some circumstances, will kill just as easily in five or six hours as, under others, in five or six days.

There is no more reason why the system should not be suddenly overwhelmed by the rapid absorption of concentrated septic fluids, than by the rapid absorption of a powerful dose of morphine. Opium in sufficient quantities will kill in from eight to twelve hours. Septicæmia will do the same thing often in less time.

Death from wounds of the abdomen may occur from shock, from hæmorrhage, or from septicæmia; rarely from peritonitis, properly speaking. When from shock or hæmorrhage, there is no reaction, and death is comparatively sudden. Reaction once established, the shock is over, and the direct danger from hæmorrhage is passed. I have long held and promulgated these views, and, when I went with the Anglo-American ambulance to Sedan, I had the opportunity of testing their truth. We had seven cases of wounds of the abdomen, and they all died, most of them within twenty-four hours. I made *post-mortem* examinations in several of these, and in all I found an effusion of reddish serum in the pelvic peritoneal cavity, and in all death was evidently the result of septicæmia. I saw several cases of recovery where balls passed through the pelvis, wounding the bladder or bowel, or both; but no recovery where the wound was above the brim of the pelvis.

MacCormac[1] gives an account of three cases of pelvic gunshot-wounds that recovered under treatment in the Anglo-American ambulance at Sedan. In one case, "the ball entered on the left side of the coccyx, traversed the rectum and bladder, and emerged just above the symphysis pubis. For a considerable time all the fæces passed by the posterior opening, while the urine flowed entirely by the anterior wound. He recovered without one single unfavorable symptom. Both wounds had closed by the 18th September, and remained so till his discharge from hospital on September 28th, when he appeared as well as if nothing had happened to him." MacCormac saw three other cases of gunshot-wound of the bladder recover without an accident, two in a Belgian ambulance, and the third under Dr. Junker, at the *Château de Bazeilles.* Four days after the battle of Sedan, I went to Mézières, for supplies for our wounded soldiers. Travelling under the banner of the red cross, we were hailed at almost every hamlet, and asked to visit the sick and wounded. Among the great number demanding our care, Harry Sims called my attention to a young German who was shot through the pelvis. The ball entered about two inches above Poupart's ligament, and midway between the linea alba and the crest of the ilium on the left side, and passed directly through the pelvis, wounding the sigmoid flexure. Fæces passed by both openings, but, of course, more freely by the one behind. His pulse was but 78, and there was no pain in any part of the abdomen. Indeed, he had every appearance of a rapid recovery. He was among French wounded, could speak only his own language, and his greatest suffering was from nostalgia. When my son spoke to him in German, and gave him every assurance of a speedy cure, and of an early removal to a German ambulance, it seemed to raise his drooping spirits, and from my experience of similar cases before alluded to, I have scarcely a doubt that he eventually got well. Now, here was a poor fellow shot through the pelvic peritoneal cavity, and yet there was not the least constitutional disturbance, nor the first symptom of peritonitis; and why was this, when all those with wounds of the peritonæum above the pelvis invariably died within twenty or thirty hours? There was no exception to this rule. The answer is simple and self-evident. In the pelvic wounds there was a direct outlet or drainage for reddish or septic serum, which is always found in peritoneal wounds, and is always the cause of death when retained. Wounds of the abdomen, properly speaking, were universally fatal, because the septic fluids could not escape, but gravitated to the lowest part of the cavity, were there retained, then absorbed, and thus produced death. I have alluded to my Sedan experience, because I believe it establishes very clearly that the principle of drainage at the most dependent part of the peritoneal membrane is the correct method of treating wounds of the peritonæum. Pleuritis was formerly occasionally fatal, but no one now-a-days dies of it. It terminates sometimes in an abundant effusion, that may kill by suffocation, and again in the exudation of a pyæmic fluid that kills by blood-poisoning. But in this enlightened day death never occurs in this way, because the effusions, whether benign or pyæmic, are promptly evacuated and life is saved, and so it shall be in diseases and wounds of the peritonæum. The time will assuredly arrive when peritonitis, so called, will not kill, because we will learn that the effusions in the peritoneal may be as safely evacuated as those of the pleural cavity; that the danger will consist, not in opening the peritoneal cavity, but in keeping it closed with its retained fluids to poison the blood and take the life of the poor sufferer. The time will also come when gunshot and other wounds of the abdomen, and perforations of the intestine, will be treated by opening the peritoneal cavity, and washing out or draining off the septic fluids that would otherwise poison the blood; for death in all these cases is produced by the same causes and in precisely the same way, and they will require the same plan of treatment.

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[1] "Notes and Recollections of an Ambulance Surgeon," etc., by Wm. MacCormac (pp. 73, 74).

The incidental allusion above to my Sedan experience opens up an interesting field of inquiry, to which I hope to return at some early day.

ART. III.—*The Influence of Uræmic and Alcoholic Poisoning on Testamentary Capacity.*[1] By STEPHEN ROGERS, M. D.

NEAR the close of the year 1869, E. I. C. was quietly, if not clandestinely, married to a man whom, report says, her education, religious and secular, would have, in the ordinary course of events, led her to shun, rather than to love.

A key to the secret of this untoward occurrence is furnished by accumulated evidence, to the effect that she was an incorrigible and hopeless inebriate. Though trained, and fairly educated, in one of the best schools for girls, this vice of drunkenness seized her soon after her return home from school, and, as a consequence, she soon became the cause of constant and harassing care to, and her habits were the bane of the last days of, her aged and widowed mother, who died about the date above given, leaving this only child sole heir to a considerable property.

About the time of the mother's death, this rich and dissolute girl was induced to marry, under the circumstances already stated.

Rumor attributes the marriage to a necessity arising from antecedent illicit familiarity between the parties, favored by the intemperate habits of the girl. However this may be, there is no question that they were married, and the following unusual history commenced. Not long after her marriage, it appears in evidence, she became the victim of attacks which, from the general description given of them by various witnesses, would appear to have been of an hysterical character, more or less modified by her intemperate habits, for these she continued to practise after her marriage with even less restraint than before.

During these attacks she screamed, talked incoherently, and threw herself about so violently as to require control, and she is said to have recovered from them after a few minutes, or at most a few hours, with no perceptible impairment of her intelligence. It also became apparent, not long after her marriage, that she was pregnant, to which fact we may justly attribute a portion of the general and violent nervous perturbation which she at this time suffered. This perturbation was manifested, as before stated, in an especial manner by the attacks, or spells, or fits, or paroxysms, as they are variously named by the witnesses, whose principal features I have already mentioned, and, except these, no alarming symptom occurred to her till about eight months after marriage, though the evidence is conclusive that she had, before this date, suffered many of the afore-mentioned attacks, and had more than once been on the verge of true delirium tremens. Either from the fear that some of those paroxysms might terminate fatally, or that her uncontrolled intemperance might induce disease which would suddenly terminate her life, or from some other fear or motive, her husband and her father-in-law, who were associated in business, went, unknown to her, some months after the marriage, to an attorney and requested him to draw up a will for her, at the same time giving him instructions as to its provisions. The will was accordingly prepared, and in such terms as to be almost exclusively in the interest of the two parties who had ordered it drawn. They took it, carried it home, and laid it away in a trunk, as the evidence shows. There is no evidence furnished to prove that the alleged testatrix ever read, or heard this paper read, except the declarations of the parties who caused the will to be drawn. It is from them alone that we hear that she even knew of the existence of this paper till almost the hour of her death. Her husband, who, by its terms, was sole heir to her estate, alone says she approved it after reading it, and still months passed, and it was allowed to lie away in his trunk, unexecuted and unwitnessed.

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[1] Read before the New York Medico-Legal Society.

Thus stood the affairs of this case when, on a Monday, this alleged testatrix exhibited signs of the approach of one of her accustomed ill turns, which, as already said, the evidence all goes to prove were the result of alcoholic excesses on a nervous system, rendered more susceptible by the pregnant state. On the following day, Tuesday, she was unusually ill, suffered a number of the paroxysms mentioned, and drank a considerably large amount of alcoholic liquor. She was still worse the following day, Wednesday, but apparently not too ill, in her husband's opinion, to render him incompetent to prescribe for her, though a physician had visited her both Tuesday and Wednesday. On Thursday morning she was so much worse that a second physician was called, who reached her about noon, and found her so seriously ill as to give him great solicitude. He found her suffering nausea and frequent vomiting, insatiable thirst, and a sense of burning at the stomach, great restlessness, getting out of and into bed, muttering, and often noisy delirium, with hallucinations of sight and hearing, though she would obey orders, and reply to simple questions, apparently rationally.

Even up to a very few hours before her death, which took place some eighteen hours after the above visit, when spoken to she would respond, and, so far as could be seen, rationally, but in a moment she would again relapse into wandering delirium. It also appears that, up to within a short time before her death, she was able to and did rise from her bed and walk about the room, a tendency her physicians say they tried to restrain, knowing that such efforts, in her exhausted condition, might suddenly destroy her life. There is no evidence I can find that she suffered any paroxysm to which the name of convulsion could be properly applied, during the last two or more days of her life.

A consultation, attended by three physicians, was had at eight o'clock on Thursday evening, and resulted in the conclusion that, among the complications of the case, there was *uræmia.*

We are not, however, informed if there were any dropsical swellings, œdema of the lungs, or if there had been any headache, or even if the urine had been examined by the physicians in attendance. On the contrary, they state distinctly that they did not examine it, but one of them gave some of the urine to an outside party, who testifies that he examined it and found *purpurine.* It is frankly acknowledged by the attending physicians that, up to the hour of the consultation, they had not arrived at a definite diagnosis of the case, and, even after the diagnosis agreed upon at the consultation, there seems to have been much doubt as to its correctness; for, either to ascertain a cause of death, or to corroborate an opinion formed before death, an autopsy was held. In the meagre records of this *post-*

mortem examination given us, nothing is said of any organ till the stomach is reached, and of this it is stated, that it was found somewhat congested, not much changed from health. It is said that the kidneys were both fatty and the liver extremely so. A dead fœtus was found in the womb, and one witness ventures so far as to give his opinion that it had been dead about forty-eight hours. This was of course a very hazardous opinion, if we are to judge it in the light of the fact that there does not occur a particle of evidence that the condition of the fœtus was even considered before the death of the mother. The only testimony I can find, which even alludes to the condition of the fœtus before the death of the mother, or to the question of parturient pains, is an equally hazardous statement of one medical witness to the effect that, if the fœtus had died three or four days before the mother's death, labor-pains would have come on earlier. Nothing is better known than the fact that a dead fœtus may and often does remain in the womb for long and indefinite periods without the occurrence of labor-pains. It does not appear in evidence that the alleged testatrix in this case had labor-pains at all. However, the conclusion from the autopsy was, that death resulted fom uræmia, caused by Bright's disease of the kidneys, though no pathological record is offered in support of that *post-mortem* diagnosis, except the vague declaration that the kidneys were fatty, a condition often associated with fatty, light-colored livers in habitual drunkards, but not by any means necessarily accompanied with notable functional derangement of such kidneys. On the other hand, the whole history of the symptoms of the case, as detailed in the evidence, is quite inconsistent with this eleventh-hour *post-mortem* diagnosis. The medical witnesses agree that the condition of the blood known as uræmia, caused by disease of the kidneys, often produces paroxysms, variable in character, sometimes maniacal convulsions, and sometimes, instead, a gradually deepening state of coma. But, to account for the extraordinary and unprecedented fact that in this case the alleged uræmic paroxysms did not induce coma and abolish all sane consciousness, notwithstanding the case terminated fatally, one of the principal medical witnesses employs the following notable language, applicable to the condition of the patient eight or nine hours before death: "It was concluded that she was suffering from uræmia, and it was a subject of remark that the case was exceptional, inasmuch as her mental operations were so clear; it is quite usual in a case of that kind that the contrary should be the case." As a support to this conclusion, one medical witness is reported as saying that he had seen many cases of Bright's disease of the kidneys, and that he had not found the mind generally affected. It is perhaps too much to expect of a judge, or of lawyers, that they should have deemed it important to ascertain if this witness had a tangible and reliable record of a case of Bright's disease of the kidneys, causing uræmic paroxysms in a woman far advanced in pregnancy, and yet which did not, at eight hours before the fatal termination, affect her mind.

I challenge the medical world to produce the record of such a case. If we exclude a few cases in which the pregnant woman, not even suspecting her imminent danger, is suddenly seized with uræmic eclampsia and her life destroyed in a few hours, no case of uræmia terminates fatally in the pregnant women without seriously affecting the intellect many hours before death; in other words, fatal cases of uræmia in pregnant women always affect, more or less profoundly, the mental power.

The history of this case, and the pathological history of uræmic *eclampsia gravidarum*, fail to furnish the slightest grounds for the opinion that death was caused by uræmia. Had we even the usual local or general œdema attending Bright's disease, or its fibrine cylinders, and fatty, degenerate renal epithelium in the urine—which we have not—the symptoms of this case, as set forth in the evidence, would be conclusive against the theory of fatal uræmia.

The evidence certainly shows that, from Tuesday to after twelve o'clock Thursday night of the same week, this woman's condition was one of nervous agitation, insomnia, and finally of busy, muttering, and talkative delirium, from which she could be momentarily aroused by speaking to her—a condition rarely or never seen after the development of fatal uræmic eclampsia, and certainly never within twelve hours of the time of death.

Due regard for the well-known intelligence of the physicians in attendance and consultation forbids the conclusion that, even at the consultation on Thursday, nine hours before death, there were not very grave doubts as to how much of a part uræmia played in the production of the symptoms. Had there been no such doubts, the line of treatment, approved by the best authority, would have been (what it was not) purely obstetrical, and obstetrical counsel and means would have been resorted to, which was not the case, so far as the evidence goes. Now, as no such measures were taken, and, so far as the evidence goes, the uterus did not make the slightest spontaneous effort to expel the fœtus, it is simply fair to conclude that the diagnosis of uræmia did not take very deep hold on the physicians of the alleged testatrix before her death. Had they adopted that diagnosis, they could hardly expect to be excused for abandoning the patient undelivered—as they did—some five or six hours before her death. Then the practical failure of three intelligent physicians to decide that uræmic poisoning existed in this case during the fatal illness, as well as the symptoms attending the "spells" or "paroxysms" suffered during the last year of life, disproves the theory, which has only the support of a most imperfect and unscientific *post-mortem* examination. Like too many *post-mortem* conclusions where toxical agents have destroyed life, this examination, according to all the evidence, was totally fruitless of truthful results. It did not demonstrate the cause of death.

Having discussed the improbability, if not impossibility, that uræmic poisoning was the cause of death in the case, I will now inquire into the other possible causes of that event.

If the testimony is correct—and it is so abundant both on the part of her medical attendants and others, and so corroborative one of the other, as to be convincing—the attacks from which she suffered during most of her married life, called "spells of fainting," or "spasms," by the witnesses, are very accurately described in most essays on hysteria. The testimony does not inform us whether the alleged testatrix had these paroxysms or fits before she became pregnant. This, however, is not to be regarded as of importance, it being a well-known fact that it is common for women to suffer this, and other forms of nervous attacks, for the first time, after becoming pregnant. There was, however, in this case an especial cause for these nervous attacks, a cause which fortunately is not very frequent among our young and recently-married women. I allude to the excessive use of alcohol. It is a fact, well understood by persons conversant with the subject, that habitual inebriety is a fruitful cause of hysterical attacks in women who have no hysteria when sober. On this account, alcoholic hysteria is regarded as distinct a form of this neurosis, as alcoholic epilepsy. There is, besides, very conclusive evidence in the case, that this woman had often, during her married life, suffered other results of the excessive use of alcohol than fits of hysteria. By his frequent experience with the attacks, or fits, or paroxysms, of alcoholic hysteria, if not delirium, suffered by his wife, it appears the husband had found out the value of laudanum. It is distinctly declared, by as respectable a witness as the case furnishes, that, by order of the husband, she bought ten cents' worth of laudanum for the deceased on Wednesday before her death. It is not proved that she did not take it, and the attending physician contradicts the husband's statement that it was ordered by the physician.

The apothecary who sold this laudanum says that the amount equals twelve doses of opium for the adult, or from twelve to eighteen grains. There is no reliable evidence to disprove that, whatever the physician may have ordered, she took, in addition, this twelve to eighteen grains of opium and an indefinite amount of alcohol during Wednesday and part of Thursday.

Now, if the husband had not regarded himself as skilled in the management of the wife's atttacks, whatever they may have been—and nothing but experience or special education could have created that self-confidence—he must be regarded as careless, or daring, or criminal, for having assumed to administer a potent drug on his own responsibility; for one of the physicians in attendance swears that, on the morning after this laudanum was purchased, and probably given, he and a neighboring physician found the patient in so critical a condition as to induce them to seek counsel. Taking the most generous view of the facts, in behalf of the husband, we must suppose that his experience with laudanum in her accustomed attacks had given him so much confidence in its efficacy that he was unprepared to appreciate the graver symptoms of her final attack. He probably was unaware of the immediate danger; having seen her recover from so many spells, he presumed she would from this one.

This is the most liberal interpretation of his behavior. But, returning to her symptoms, we find them enumerated as follows:

Much nervous and muscular agitation, restlessness, and insomnia; vomiting and insatiable thirst, with a burning pain at the stomach; hallucination of sight and of hearing; muttering and talkative delirium, calling the names of persons absent or dead, and yet replying promptly to questions; obeying the requests of the physicians, and in a moment forgetting them; and finally her ability to walk about the room till near the hour of her dissolution.

It would appear that few experienced medical men could mistake the significance of that array of symptoms, especially when occurring in a person of the admitted habits of this alleged testatrix. The following lines from the great master of clinical description, Dr. Thomas Watson, most aptly and fully hit the symptoms presented by this case:

"If you question the patient about his disease, he answers quite to the purpose; describes in an agitated manner his feelings, puts out his tongue, and does whatever you bid him; but immediately afterward he is wandering from the scenes around him to some other that exists only in his imagination. Generally his thoughts appear to be distressful and anxious; he is giving orders that relate to his business to persons who are absent, or he is devising plans to escape from some imaginary enemy; he fancies that rats, flies, mice, reptiles, or other objects, are running over his bed, or that strangers are in his room. He rises to look suspiciously about the room, or to leave his bed, but is readily induced to lie down again.

"Upon inquiring into the history of the patient, in a large majority of instances you will find that he has been an habitual drunkard, and very frequently that from some reason or other this habitual stimulus has been diminished or taken away. Sometimes, however, it comes on in those who are perpetually fuddled, even though they have not intermitted their usual indulgence in drink."—("Practice of Medicine.")

The burning pain at the stomach, vomiting, and thirst, which were so marked symptoms in this case, are often absent in alcoholic delirium. But as relates to the mental phenomena, Dr. Watson's general description of delirium tremens comes wonderfully near to meeting every symptom shown by this alleged testatrix during her last illness.

It will be very difficult, if not impossible, to account for her symptoms upon any other supposition than that they resulted from alcoholic poisoning. If that cause be admitted, it is very manifest that she was quite *non compos mentis* for at least two days preceding her death. All her declarations, expressed wishes, as respected persons and business, after Wednesday morning, were in all probability mere ravings, and totally unreliable. Among those declarations should probably be placed, that her husband had injured her by striking her in the abdomen, causing a black-and-blue stain. Though two female witnesses testify to this declaration, and to having seen the bruised spot, it is not by any means improbable that they themselves asked her if the bruise had not been made by the husband, to which she answered "Yes." Persons under this state of mental derangement need only the suggestion, to charge anybody with any act.

The husband denies that the declaration has any foundation, and he is, under the circumstances, by far the more reliable.

The cautious testimony of the physician, who saw her between eleven and twelve o'clock Thursday night, is in all probability the most favorable representation that could be made of her intellectual condition. He declares, under oath, that she was not, in his opinion, able to fix her mind long enough upon any one subject to dictate any article in writing.

It is in evidence, however, that she would reply to questions promptly, and apparently rationally, and would do, so far as she could, any thing her physician or friends desired her to. We have seen that such a condition is very far from indicating rationality. In certain states of alcoholic delirium, responses to all manner of questions are obtained. Whether asked if they wish to die, or wish a drink, such persons are very liable to give the same reply—"Yes," or "No;" and the same if asked if they wish to see a priest or a physician. It may, hence, be readily comprehended how the subject of such a condition of mind may be brought to reply "Yes," to any number of questions relative to the distribution of property by will; or how, if requested to sign a paper, he would at least make an effort to do so, though it might result in a complete bungle.

This power to respond, and this readiness to obey commands, are terminated sometimes very suddenly by the occurrence of death after some extra effort. In other cases, both the physical and mental power fail gradually, and life does not become extinct till some hours after response and volition have failed. So far as the testimony instructs us, this impossibility of obeying requests, and of intelligent response, was reached in the case of this alleged testatrix about 12 o'clock on Thursday night, and she died about five hours after. It appears that, between 11 and 12 o'clock, having been asked if she would sign a will, she said "Yes;" the arrangements were at once made, she was held in a reclining position, a pen was put into her hand, the place of signature pointed out, and she was requested to sign, which she did in a very imperfect manner. This having been accomplished, it appears in evidence that either she, or some other party, conceived the idea of adding a codicil. What conscious part she had to do with said codicil may be fairly inferred, from the fact that, after responding to some half-dozen lines, of which it consists, she was too near dead to make it practicable to get her signature to it. She died, so far as can be gathered from the testimony, from four to five hours after this effort with the codicil, and died of asthenia. If it be admitted that she was suffering from alcoholic excesses, and that the cause of her death was even only in part of that character, not only the story of her symptoms, but the whole history of the influence of alcoholic poisoning on the intellect, and the accumulated clinical history of alcoholic delirium, go to confirm the opinion that this alleged testatrix had *no conscious appreciation of what she did or said for at least twenty, and probably seventy, hours before death.*

If, however, we admit that there was a uræmic complication, or that uræmia was the chief cause of death, we encounter another unpleasant yet important fact in the case. On Wednesday, the day before the fatal symptoms came on, the ten cents' worth of laudanum was bought and probably administered. Now, it is a recognized fact that the administration of opiates in uræmia is dangerous practice in ever so skilled a hand; and hence, if that were her condition, the result of that medication, on the husband's own responsibility, may have been disastrous, and will now, of course, never be known. It is just to the husband, however, to say that the symptoms on the following day, as described by the witnesses, all contradict the theory that she suffered from uræmia, or that, if she so suffered, she took laudanum on Wednesday.

But it is possible, however unprecedented it may be, for uræmia to be manifested in a rare form in this respect.

There are two points in the case about which the medical testimony and the lay testimony are positive: one is, that the deceased was unable to finish her last will and testament; the other is, that she died of some blood-poisoning, either uræmic or alcoholic, or possibly choleric. The only known circumstance in which the intellect of a person, fatally poisoned with urea, is sound and disposing a few hours before death, occurs, as I have before said, in those cases where uræmic convulsions come on with little antecedent disturbance, and destroy life suddenly. This was not the case with this alleged testatrix, and therefore the idea that she died of uræmia, without convulsions, yet was of sound mind five hours before death, is quite untenable. The same law applies to the choleric or bile poison. On the other hand, if we accept the theory that her vitality gave way under the destructive effects of alcohol, she had no intellect, in all reasonable probability, for a day or two before death. In either case, we are without the slightest reason that this alleged testatrix had even an approach to a sound and disposing mind and memory after 8 o'clock on the Thursday in question.

As this case would lose much of its instructive and practical features if some of the legal history of it were omitted, we will occupy a little time upon it:

As has been stated, there is no evidence, except from the principal heir, that the alleged testatrix knew any thing about the contents of the proposed will. There is no evidence that it was read to her at the time she made the blundering effort to sign it. On the contrary, it is stated that it was not read. The parties solely interested in it either dictated it or witnessed it, or both; the husband, the father-in-law, and the brother-in-law, doing all these offices, and were all associated in business. The unsuccessful attempt to add a codicil was a most trifling matter pecuniarily, the whole amount thereby diverted being but a few hundred dollars.

The court before whom the case was heard, decided that the decedent was at the time she signed the paper of sound and disposing mind, and gets over the fact that the parties solely benefited by it should have had all to do with its dictation, and even with witnessing it, in the following way: "However indelicate or impolitic it may have been for the proponent to have persons so nearly related to him, as the subscribing witnesses to the will of his wife, yet they were not disqualified, and I can find no reason in law why their testimony should be discredited, unless there should be other testimony and circumstances than have been presented in this case to weigh against their credibility."

Had the testatrix and proponents of this alleged will been, during the last day of her life, isolated from mankind, in the midst of some desert, or on some rock in the sea, there would be some reason for this attempt of the court to present an excuse for the fact, that the parties witnessing it were closely related to the principal heir, and known to have been indirectly largely benefited by it; but when it is known that these witnesses affixed their signatures to it in the heart of a large city, and at an hour of the day when neighbors, notaries, and lawyers, are at their residences, and easily obtained, he will find it difficult to offer any laudable or legitimate reason for that "impolitic" irregularity.

It is often very useful to take different views of pictures as well as courts. The uncertainties of the law are thereby often shown to be quite as great as those said to be proverbial of medicine.

The same court which issued the above opinion, also, not very far from the same time, issued and subscribed to the following:

"The law is very zealous against straining after probate, when the preparation of a will is made by a party interested, to be executed by a person of doubtful capacity, and requires that, to support such probate, there must be *strong proof of intention outside of the interested party*, who claims to have acted under instructions."

"The court must take a cautious view in deciding questions of law and fact. It is an established principle that, where capacity is *doubtful at the time of execution*, there must be proof of instructions or of *reading over*. A man in a languid, torpid state may easily acquiesce in signing his name to a will set before him, more especially when he knows that there is something in the paper which he wishes to take effect; the presumption also is strong against an act done by the agency of the party benefited; the act is not actually defeated, as it was by the civil law, *provided the intention can be fairly deduced from other* circumstances. Though the court will not impute fraud, it will require *strong proof of intention*."

There is no positive or even circumstantial proof that there was any intention on the part of the alleged testatrix to give all her property to her husband. In addition to what has been said in relation to the signing of the alleged will, it may be interesting to further quote from this same court as to the mere signing of a will being an index of the state of soundness of the mind of a testator. In the same opinion, above quoted from, it is said:

"The power to affix a signature to a will, or even to sign checks, does not prove sanity so far as the law requires to perform such a solemn act as the making of a last will and testament. They may be merely automatic acts." Such unquestionably was the act of signing the alleged will in this case. The admitting of this will to probate was very clearly a "strain" in violation of all approved rulings, and of previous opinions of the same court.

Courts have the power to give opinions, and the people have a right to decide if those opinions are consistent with common-sense and previous rulings, and physicians have an occasional right to say if those rulings are sustained by pathological facts.

ART. IV.—*Alcohol as Food.*[1] By THOS. J. MAYS, M. D.

THERE is, perhaps, no other substance in the whole list of the *materia medica* which has received greater and more unjust abuse, not alone by a certain mass of the populace, but by unscientific professional men, than the article which forms the basis of these remarks.

No one will deny that its abuse is not infinitely a great moral and physical wrong, but, as long as it is abused, the true value of this most efficient substance will not be developed.

Every stimulant of which we have a knowledge is, in large doses, a poison; and here we might draw a great moral lesson, that the evil is always so closely associated with the good.

The more potent and valuable a substance, the more fearful are the results of its abuses.

Admitting, then, that alcohol is a great evil if used improperly, yet, that is no evidence that it is not one of the most valuable articles of diet which we have at our command, if used properly.

In the common acceptation of the term *stimulant* it is implied that a physical agent may produce, at once, and without improved cerebral nutrition, an exaltation of the mental activity.

The term *stimulus* literally means to *goad*, prick, or spur, but even this is only a figurative and a very imperfect mode of expressing therapeutical and physiological stimulation, and in this paper I shall not employ the term *stimulus* to signify the impulse to act alone, but also to supply the materials necessary for action. It is merely a physiological impossibility to suppose that an agent can come in contact with the tissue of the body and produce an exalted, stimulated activity, without having an inherent property to increase the nutrition of the part at the same time.

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[1] Read before the Lycoming County (Pa.) Medical Society, October 1, 1872.

Stimulation, excitability, irritability, etc., refer to the residence in the tissues of the body of some essence which, not exactly mind, possesses at least passions, emotions, and volitions, to which stimulants, excitants, and irritants appeal; and there can be no doubt that it were vastly better for the medical profession if those terms were altogether swept from the medical vocabulary. If, however, these words are still to be retained in usage, we must, at least, seek for some new definition and limitation of their meaning, for it is unwise to speak as if we still believed that demons were residing in our stomachs, nerves, or ultimate cells, whom we could soothe with cordials or anodynes, excite with stimulants, or inflame into active wrath by irritants.

If we could shake ourselves free of the old hypotheses of vital action, we should be far better prepared to realize the true character of mind, not, as we occasionally see, in language which would almost imply that intellect was a secretion of the brain, but that it is changeless, eternal, unconfined by time or space. It is quite customary, in describing the action of inebriants or narcotics, to speak of these agents as "stimulating the mental powers," while there is *no* stimulation, but the reverse.

All that we know is, that the material part of man's brain should be placed in that state of nutrition which represents material health, and when this has been done it affords to the mind the best opportunity to act rightly.

Healthy vital action consists in balancing the tissues of the body between two antagonizing forces—the different tissue-currents of electricity, heat, etc., and the physical properties of the tissues.

Muscular contraction may be strongly suspected of depending altogether upon the physical properties of the tissues in which they are developed, and that true vitality would rather act in restraining than exciting it. It is a fact that the most steady and persistent contraction which can possibly develop in muscle is that which sets in after death, and which does not appear until the last vestige of life has disappeared. The researches of Dr. Harley make it very probable that strychnia acts by preventing the oxygenation of the blood, in which case it cannot be supposed that it gives increased force to the nerves, but rather that it reduces the muscles to a condition in which they obey the laws of inorganic matter. This molecular action must be maintained at a certain uniform standard, which condition constitutes perfect, absolute health; variation from this, either above or below, is disease.

In certain diseased conditions of the body, as in inflammations, hypertrophies, etc., there is an increased, while in atrophy or degeneration, a decreased molecular action.

In order to sustain this uniform, healthy, vibratory action, there must be a constant application and assimilation of fuel, which will distribute its force to every living germ in the body, and so maintain the healthy characteristics of life.

It would be absurd for any one to suppose that he can *goad* a poor debilitated brain up to its healthy standard, with a physical agent that is not able to furnish the materials which are so essential for its well-being and normal action.

Foods and stimulants in the proper sense of the term act precisely alike physiologically and therapeutically, with this difference, that the former are more permanent in their effects than the latter. They both promote *nutrition* of the tissues, they both furnish materials for the development of animal heat, and both form elements for excretion.

The only action which physical agents have upon the mind, of which we are aware, is that which they exercise indirectly by changing the condition of the brain, making the latter more or less efficient as an instrument of the mind. In the common acceptation of the term "alcoholic intoxication," it is supposed that the brain is over-stimulated or irritated, at first sight resembling excitement; but on closer examination we shall see that it is the reverse. It is a certainty that a natural opposition exists between the reason and the will on one hand, and the emotions and appetites on the other.

The symptoms of alcoholic inebriation clearly show that it is the emotional and appetitive part of the mind which is in action, while the intellect, on the contrary, is directly enfeebled. There is no exception to this rule, that in proportion to the degree in which the lower and more animal nature preponderates in the actions and words of a drunken person, the less of intellectual activity does he display. Alcohol, in doses large enough to produce intoxication, paralyzes the will and reason, and gives almost universal sway to the appetites and animal propensities; but it is not in doses so large that we derive the pure beneficial and stimulating effects of alcohol, and it is only within the scope of the present paper to write of alcohol as a food or stimulant, and not as a narcotic.

Food is any thing that sustains life. Nearly all ordinary food, when taken into the body, is broken up, undergoes a chemical change, develops tissue and useful force.

In the year 1860, Messrs. Perrin and Lallemand published a paper, in which they held that all the alcohol taken is eliminated again unaltered, prior to which time it was the generally-received opinion that the greater portion of alcohol taken was oxidized in the system, and only a small fraction eliminated unaltered. This opinion was soon very generally adopted, notwithstanding the fact that these investigators never could recover from the excretions more than a very small part of the alcohol taken, although it had been given in doses very largeand frequently repeated; but this was easily accounted for as unavoidable loss. Since then, however, the investigations of Drs. Anstie, Dupre, and Bence Jones, have satisfactorily proved that alcohol, when taken into the system in small doses, acts similarly to other ordinary food, is broken up chemically, and gives rise to useful force. If it should be presumed that all food is transformed in the body, and that this is not the case with alcohol, then would not this be the worst definition that could be given to food? for water, which is not transformed at all, is after all the most necessary element of nutrition.

If, however, alcohol can act, as some suppose, by remaining unchanged in the system, like water, and supporting the system by a kind of anti-waste action, then it ought to be true also that it can be found in the excretions in like quantities in which it was taken, which is the case with water; but, unfortunately for their theory, this is not true, for all the alcohol that is taken in purely dietetic doses is oxidized in the system, and cannot be traced in the excretions as such.

There is no more certain proof of the alimentary character of alcohol than may be obtained by looking around us in acute diseases, where, during many days of abstinence from common foods, it has repeatedly supported life; and Dr. Anstie, in his researches, clearly proves that persons have supported themselves almost solely on alcohol and inconsiderable quantities of water for years.

The support of the organism by alcohol and other stimulants is one of the most remarkable phenomena which can be offered to the attention of the scientific medical world.

It has been somewhat hastily assumed that, inasmuch as nearly all stimulants in large doses will also act as narcotics, the only way in which they can act as food is by the arrest of vital changes. The men who hold such a view believe, with Lallemand and Perrin, that alcohol does not undergo a chemical change in the body, and, as soon as it comes in contact with the tissues, it coagulates the albuminoid substances, and in this way it supports or rather preserves life. They say, place any dead tissue of the body in alcohol and it will keep it from decomposition for any length of time, without taking into consideration the fact that, when alcohol comes in contact with the walls of the stomach, it does not meet dead matter, but a live membrane fortified strongly with its digestive fluids. As soon as alcohol in purely stimulating doses is taken into the stomach, it meets the digestive fluids, is digested and disposed of like any other food, and goes to form tissue and animal heat instead of retarding the formation of tissue and arresting the metamorphosis of the body. Observations are entirely wanting as to the rapidity of tissue-change in the extraordinary instances in which life has been preserved in the absence of ordinary food, by the action of a stimulant for a long period; but the instances on record are numerous in which the latter occurrence has been noted, and vital energy was maintained even at a high point.

Recent researches have shown that there is in alcohol, as in nearly all other stimulants, a line of dosage below which no narcotic, but stimulating effects are produced, and this line is nearly constant for each individual. The physiological action of large doses has quite the contrary effect; indeed, let the individual pass the line by just so much as is necessary to produce a little flushing of the face or a slight diuresis, and immediately a small but certain unchanged quantity of alcohol will pass off in his urine.

This is always so sure a line of demarcation, that, just as soon as these symptoms are developed, there is danger of poisoning. But these symptoms are not due, as many would have us believe, to the stimulant effect of alcohol, but on the contrary to that of narcotism. Alcohol in such doses immediately produces a paralyzing effect upon the whole nervous system; the flushing of the face is due to a paralyzed condition of the cervical sympathetic.

As long as all the alcohol is burnt up in the body and undergoes chemical changes, so long will it produce no narcotic effects; but as soon as it comes in doses too large, and overfloods the whole system, then it produces a paralytic effect upon the brain and all the nerves, and generally lowers arterial tension, which depends altogether upon vaso-motor paralysis; thereforewe find an increased, passive, excretory action of the kidneys, not natural, but simply flowing out, the barriers having first been knocked down to facilitate its egress. It has been proved by repeated experiments that about one ounce of pure alcohol can be taken into the system *per diem*, and undergo a chemical change without producing any narcotic results whatever.

Alcohol in the form of wines sustains the most prominent fitness for all legitimate purposes of this kind.

Let us, in the first place, consider the relative strength of wines as compared with each other.

The strong wines, including port, sherry, madeira, marsala, and all that genus, on the average contain about seventeen per cent. of absolute alcohol; and the light wines, including claret, burgundy, champagne, rhine, Moselle, and Hungarian wines, average about ten per cent. of alcohol. It is among the wines which do not exceed, on an average, more than ten per cent. of absolute alcohol, that we must seek a beverage for every-day life; and among these there is perhaps none better than the Bordeaux and sherry wines.

There is no clear line of demarcation between health and disease, as is generally assumed in common speech. The foreshadowings and faint images of diseases are often to be seen in the life of those who are usually regarded as healthy.

It is in the study of the conditions, as those of the laboring-man, the hard-working student, the professional man, the politician, or the busy merchant, and their relations to the dietary remedies which general custom has prescribed, that we are most likely to find a true basis for the use of these remedies in disease—conditions which imply an obvious deviation from the line of health. For such there should be prescribed, as a regular daily allowance, a bottle of claret or sherry, divided into three equal doses, one dose with each meal. The number of persons with whom such a diet really disagrees is very small.

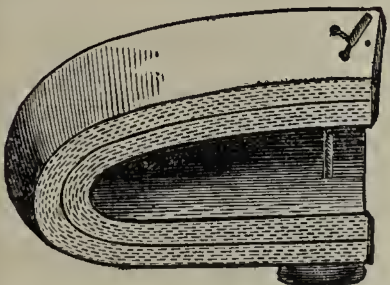
The judicious use of wine as a part of diet in young children is entirely free from danger, and on the other hand will do a great deal of benefit. The cases in which it is useful we cannot absolutely call disease; they are those where a tendency to wasting is very marked, and where trifling catarrhs are caught very easily and are very slowly shaken off.

Adults should be advised to take their wine only with their meals, while in children, on the contrary, it is much better to give it separately at regular intervals.

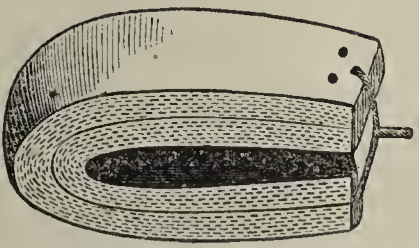
Used with proper precautions, there is no danger of corrupting children's taste. In concluding this paper, I would say that my sole object is to show how wines may be made the wholesome beverage of ordinary every-day life, rather than a dangerous, seductive luxury, easily leading to fatal results.

ART. V.—*Varicocele: its Radical and Easy Cure by a Safe Operation.* By J. F. HEUSTIS, M. D., Mobile, Alabama.

SEEING in the number of your JOURNAL for October, 1872, a new mode of operating for the radical cure of varicocele, by Dr. Davison, of San Francisco, I am reminded to publish a simple, safe, and rapidly effectual operation, devised and practised by myself; rendering the case so easy that no one suffering from this troublesome disease need hesitate to have the operation performed. Time, suffering, and risk, are all saved; and the doubt that deters many from actively meddling with a varicocele that may be destroying the pleasure of one's life, disappears before the extreme simplicity and safety of the operation. In the *British Medical Journal* of September, 1871, Mr. John Wood, of King's College, describes his operation, by the application of metallic-wire pressure, applied subcutaneously, and with very little disturbance of the parts, by means of a new instrument he has devised and carried out for the application of a continually-acting spring traction. But his operation is not strictly subcutaneous, for he states that "the steel shaft which carries the wire is pressed down close upon the vein, through the puncture at which the ends of the wire emerge." The puncture is left uncovered for the *escape of discharge* which may form, for which the shaft of the instrument and the wire form a direct conductor. In a strictly subcutaneous operation, where air is excluded, there should be no discharge, if there is no great amount of irritation. The use of the wire avoids that; but the open and exposed puncture in a measure does away with this advantage. In all other respects, Mr. Wood's operation is admirable. But there are some points that he has not sufficiently insisted on, that add much to the expeditious and easy cure of the disease. Two of these are stated by Dr. Davison, viz., placing the patient in a recumbent posture when the operation is being performed (or finished, rather); and removing the ligature before it cuts through the vein. The first, not mentioned by Mr. Wood; the latter, spoken of, but the length of time allowed, for the wire to remain (a week or ten days), too great. Dr. Davison uses a silk ligature, which requires subsequent tightening: both very objectionable features in his operation. Before seeing Mr. Wood's article, I had been thinking of some better mode of operating in varicocele, and the same idea of continuous spring traction acting on a wire had occurred to me; but, having no steel instrument, I substituted a piece of India-rubber hose, bent on itself, which gave sufficient spring traction. To more effectually close the opening of exit of the wires, and prevent the heating and irritation of the contact of the rubber, I interposed a thin disk of lead with a minute opening in its centre for the passage of the wires—the rubber being such as is used in fire-engine hose, with linen interposed between two layers of rubber, which gives it greater tension and elasticity when bent on itself, the piece being three-tenths of an inch thick, three-fourths of an inch wide, and two and one-fourth inches long. At each extremity, near the edge, small holes were made for the passage of the wire; *one* on the side, to lay against the button and scrotum, and *two*, separated by a slight interval on the outer side, leaving a space for tying or twisting the wire over; the under opening as wide as the space of the two upper ones, to facilitate the passage of the wire. Close to the edges of the rubber a small opening was made for the passage of a wire to hold the extremities together when doubled. The diagram shows the upper surface of the rubber, and its appearance when its extremities are bent together and held by the wire, which is twisted at the ends. The leaden button is nine-sixteenths of an inch in diameter.



Rubber spring applied; ligature wire passing through button, lower opening, and two upper openings of rubber; retaining-wire cut; ends of spring sprung apart.



India-rubber spring. Ends bent together and wired; upper surface. The two openings are for tying or twisting the wire across.

Leaden button, full size.

I will now proceed to the operation. On the day previously to its performance, the bowels are thoroughly cleansed out with a dose of comp. cathartic pills, in order that the patient may not be compelled to leave the recumbent posture for three days. The patient standing (to fill the veins with blood, and render them conspicuous), the distended vein is carefully separated from the other constituents of the cord, and held between the left forefinger and thumb; their points pressed firmly and closely behind it, while a large *sewing* needle, threaded with doubled silk thread, leaving a loop, is quickly passed through the scrotum behind the vein, close to the ends of the fingers. A piece of fine wire, of pure silver, is bent on the loop of thread, and drawn through. The patient now lies down, and the veins become empty. The skin of the scrotum in front of the vein is pinched up, and drawn away from the vein, and a blunt-pointed sewing-needle, threaded with doubled silk with the wire bent on, is passed through the opening made by the first, in front of the vein, entering at the opening of exit and emerging at the opening of entrance of the first, the point of the needle being directed toward the front part of the scrotum, as it passes through from one opening to the other, while the pinched-up skin is kept drawn forward. This insures the inclosure of the vein (and nothing else) in the loop of wire. The two ends of the wire are passed together through the leaden button and the under opening of the rubber, and separately through the upper openings, and loosely tied with a single knot. The operation is now suspended, to bring the patient fully under the influence of chloroform, which previously has not been necessary, the pain inflicted being trifling. But, as the tightening of the vein is very painful, I prefer to use chloroform at that moment. The patient being chloroformed, the rubber is pressed down on the button and scrotum, and the wire drawn firmly through, and tied or twisted. The wire holding the ends of the rubber together is now snipped, and the two ends of the rubber spring apart, increasing the tension of the wire. The piece of snipped wire is removed, the ends of the ligature cut off, and the operation is finished; and, if neatly done, is almost, if not quite, bloodless. Morphia is given, if the pain becomes severe, and the patient required to use the bed-pan to pass his water for three days, so as not to refill the ligatured vein by rising from the recumbent posture; at the end of that time, the wire is snipped and withdrawn, chloroform being administered to prevent pain; but, the patient should keep his bed for four days longer, to allow the inflammatory swelling to subside. In ten days he can return to his business. The swelling around the vein, at the point of ligature, is at no time very considerable, and, after the removal of the wire, subsides rapdly, scarcely leaving a trace of the operation in a few weeks. While the swelling lasts, the testicles should be supported with a suspensory net; but there is no need of it after all thickening has disappeared. During the inflammatory action, immediately following the operation, the testicles are supported with a linen handkerchief or towel passed behind them, its ends fastened to another around the waist, and lead-water and laudanum kept applied on lint.

The important points of the operation are: a thorough emptying of the bowels immediately before the operation, so that the patient will not have to leave the recumbent posture for three days; passing the wire behind the vein while the patient is standing, the vein being then swollen, large, and easily defined, and separated from the vas deferens, etc.; passing the wire in front of the vein with a blunt needle while the patient is recumbent and the veins empty; the administration of chloroform at the moment of tightening the ligature; the preservation of the recumbent posture for three days, and the removal of the wire from around the vein then, administering chloroform to prevent pain; the use of pure and very flexible silver wire (for, the more flexible, the more easily it is removed), the leaden button, and India-rubber spring.

The advantages of this operation are: less inflammatory action than when a silk ligature is used; the avoidance of the necessity of tightening the ligature at a subsequent period, which would cause excruciating pain unless chloroform were administered; the certainty of including nothing but the vein when the needle is passed behind it while it is at its fullest distention, as in the upright posture; the small amount of inflammation and swelling, by preserving an empty state of the veins by the recumbent posture at the moment of tightening the ligature, and for three days after, until sufficient time has elapsed for plastic lymph to occlude the veins and prevent refilling. This is a point that I have never seen mentioned, and the only one in which I claim originality, and one I think of the greatest importance to insure an easy, safe, and rapid cure. For, should the patient rise from the recumbent posture before the occlusion of the veins by plastic lymph, is it not plain that the cure is retarded and interfered with by a refilling of the veins with blood? and, if once refilled, how are they to become empty when the principal vein is tied—the blood readily entering by gravitation from the artery, but cut off from its regular route of return by the ligature?

Clinical Records from Private and Hospital Practice.

I.—*Functional Aphonia of Six and Half years' Duration. Intercurrent Lead-Poisoning affecting the Arytenoideus. Recovery under the Use of Electricity and Iodide of Potassium.* By Andrew H. Smith, M. D., of New York.

Mrs. G., aged about thirty-two, married ten years, no children. Had not been very strong for many years, when, during the winter of 1865–'66, she lost an excessive amount of blood during her menstrual periods. For three or four months she noticed that with each return of the catamenia her voice became noticeably weaker, until in March, 1866, it became merely a faint whisper, in which state it remained until I saw her in October, 1872, a period of six years and a half. During this time she suffered more or less from uterine troubles, and her general health was not good. In September last, she came to this city from her home in Newburg, and was under the care of Dr. Janvrin, for displacement of the uterus and neuralgia of the coccyx. By Dr. Janvrin she was recommended to me, and I saw her near the end of October. Her general health had by this time improved, but her local troubles remained about the same. Her voice was a very faint whisper, and even a short conversation caused great fatigue of the muscles of the chest. This was at once explained by the laryngoscopic examination, which showed that there was not the slightest approximation of the vocal cords on attempting to speak, and, the glottis remaining widely open, a large volume of air was required to be forced through it in order to produce even the faint whisper above mentioned. This demanded an effort of the expiratory muscles which was very fatiguing. The larynx appeared in every way healthy.

Recourse was at once had to the faradic current, the negative pole being applied directly to the vocal cords by means of Mackenzie's electrode, while the positive pole was placed upon the outside of the throat. The first application produced a slight movement of rotation of the arytenoid cartilages, and after two or three sittings there was a considerable improvement in the strength of the voice. In the course of ten days, the battery being applied daily, the lateral crico-arytenoids and the thyro-arytenoids had fully resumed their action, the ligamentous portion of the rima coming together perfectly. The voice had become very much louder, so that it could be heard the length of a large room, and the patient no longer complained of fatigue even after a long conversation. But at this point the improvement rested. On attempted phonation there still remained a triangular opening in the glottis posteriorly, showing that the arytenoideus failed to act. I then applied the electrode in the pharynx in such a way as to cause the current to pass directly through the recusant muscle, but without the least response. This was continued daily for nearly three weeks, the current being applied externally also at each sitting; at the same time $\frac{1}{50}$ of a grain of strychnia was injected under the skin of the throat every alternate day until the muscles of the neck and face twitched to an extent very uncomfortable to the patient. But still I could not induce the slightest action in the paralyzed muscle, and I began to fear that I was destined to be completely baffled.

Finally, it occurred to me that there might be some intercurrent cause at work to defeat my efforts; and lead-poisoning at once suggested itself. On inquiry, I elicited a complete history of lead-colic and of wrist-drop, occurring a few months before. Several of the front teeth were gone, and those that remained had a deposit of tartar about their necks causing an unhealthy condition of the gums, so that I could not decide definitely as to the presence or absence of the characteristic blue line. Still the other points were made out so clearly as to leave no doubt in my mind that the patient had recently been poisoned with lead, and she stated that she had for some time used water supplied through lead pipes. I concluded, therefore, that there was lead still in the system, and that it was localized in the arytenoid muscle, to the exclusion of the other muscles of the larynx; just as we find it affecting the extensors of the wrist, while the flexors escape entirely. Accordingly, I addressed a note to Dr. Janvrin, calling his attention to the new point in the case, and asking him to prescribe accordingly. This he did, ordering forty-five grains of the iodide of potassium daily. After ten days of this treatment, during which I did not see the patient, she again presented herself at my office. She had, apparently, lost all that she had gained. Her voice was as feeble as at first, and she was wholly despondent. The very first application of the current, however, brought back the former volume of the voice, and, after three or four sittings, I had the pleasure of seeing a slight action of the arytenoid muscle. At the end of ten days, she could utter occasionally a laryngeal sound, and in two days more the voice was fully restored, and has remained so since. For the first five or six days, the vibration of the voice caused a very unpleasant sensation in the head, and, as she expressed it, nearly drove her crazy. This passed away, however, as she became accustomed to the jar.

In this case, the aphonia was at first entirely functional, but, during the last year, an organic element was superadded which nearly defeated the cure. But for the discovery of this element, all local treatment would doubtless have been unavailing, as regarded the full restoration of the voice.

II.—*A Case of Catarrh of the Eustachian Tubes, from Naso-Pharyngeal Catarrh, with Considerable Deafness, Tinnitus Aurium, and Vertigo, cured in one Week by Inflation, and Nitrate of Silver to the Tubes, by the Faucial Eustachian Catheter.* By O. D. Pomeroy, M.D.

I. J., aged twenty-four, applied on January 10, 1872, with a considerable deafness, tinnitus aurium, and symptoms of vertigo.

The tinnitus was located in the head, and not in the ears, as is occasionally the case, and was very annoying.

The last series of symptoms has continued for four weeks. Last winter he had a similar attack, except there was no perceptible deafness, which lasted until warm weather. On examination, I found the membranes somewhat sunken, with the light point diminished in size; otherwise they were normal. The hearing distance was 4″ for right, and 6″ for left, which by inflation by means of the faucial Eustachian catheter arose to 12″ for right, and 14″ for left. The throat was red, granular, swollen, and œdematous; the uvula swollen and elongated. I at once applied a half-drop of a 4.80 gr. solution of arg. nit. to each Eustachian tube by means of the faucial catheter. This was repeated three several times, at intervals of two days, when the patient was found to be cured; the hearing distance had arisen to the normal for watch and voice; the tinnitus and vertigo had entirely disappeared. The patient is still (February, 1872) under treatment for the naso-pharyngeal catarrh by means of carbolic acid, ℥j to the Oj of water every other day by the hand-rubber spray instrument. This case illustrates the nature of tubal catarrh dependent on pharyngeal catarrh. The latter has been present for a long time, but has failed to involve the region of the Eustachian tubes sufficiently to disturb their function, except on this occasion, and once last winter, when the ear-trouble, true to its catarrhal causation, continued until warm weather.

This case is peculiar in not at first exhibiting the maximum hearing distance after inflation, which in cases of this description is usual. The surgeon ordinarily is only able to state to the patient that the restoration of the hearing is equal to the best attainable result of inflation on the first or second interview—the object of the treatment being to maintain a normal perviousness of the tubes, so that inflation after a while is unnecessary. The catarrh of this patient should be treated several months at least, and in the mean time we may observe a relapse to the hearing distance, which will only be temporary. It will also be found, as the experience of the writer has proved by many cases, that relapses of throat or ear trouble will occur much less frequently after a course of treatment than before; the patient not "taking cold" in the head and throat as readily as previously, or, if he does, it is not as severe or long-continued an attack.

III.—*A Case of Otitis Media Suppurativa, with Mastoid Periostitis; Complete Relief by Incision, without the Evacuation of Pus.* By O. D. Pomeroy, M. D.

Mary V., aged twenty-three, recently married, of slight figure, light complexion, good general health, but not able to en dure much hardship, on the 7th of January, 1872, was attacked with great pain in the ear and side of the head, which had lasted until her visit to the Manhattan Eye and Ear Hospital three days subsequently; not allowing her any rest day or night. Her appearance indicated prolonged and acute suffering; she was thoroughly demoralized by it. On examination, the external meatus was swollen so as to make inspection of the membrana tympani impossible, there were a profuse discharge, great tenderness about the region of the external meatus, difficulty and pain in opening the mouth; slight redness and œdematous swelling of the mastoid region, with tenderness on percussion. At once an incision was made as nearly over the region of the mastoid antrum as possible, an inch and a half in length, dividing the soft parts to the bone, including the periosteum. No pus was discharged, as might be anticipated, but a moderate quantity of blood.

While waiting for the bleeding to subside, the patient felt sensible relief, and has not since (January 25th) experienced a particle of pain about the ear or head, except for a couple of hours after four A. M. of next night. Ordered poultice behind auricle, ear cleansed by syringing with warm water three times daily, together with instillation of a saturated solution of alum in water into the external meatus. In one week discharge has stopped, and Politzer's operation produces the perforation-whistle, which was impossible previous to this, on account of closure of the Eustachian tube, probably from swelling at its tympanal orifice. The severity of the attack, and profuseness of the discharge, would occasion a strong suspicion of perforation of the drum-membrane, even had we not the perforation-whistle to prove it. This attack had been treated by blisters and poultices without avail. Five weeks previously she had a similar attack, lasting two weeks; the pain in that instance was relieved by morphine, after other remedies had failed. The incision behind the auricle rapidly healed without producing pus, which apparently proves that it is not necessarily essential that pus need be found to insure relief. The inflammation here had evidently not gone beyond the hyperæmic stage, and was aborted by the timely use of the scalpel.

Correspondence.

To the Editors of the New York Medical Journal.

Gentlemen: In your last issue, of March 1, 1873, on page 316, in a review of "Surgical Diseases of Infants and Children" by "M. P. Guersant," you have done Prof. Hamilton as well as myself great injustice, in your remarks about the treatment of fractured clavicle.

Your reviewer says: "The latter surgeon (Sayre) fixes the arm in a perpendicular position, which cannot make tense the clavicular fibres of the pectoral muscle . . . . This point escaped the quick eye of Prof. Hamilton," etc.

To show the incorrectness of this criticism, and to prove that your reviewer could not have read my paper on "Fracture of the Clavicle," I quote from my paper as printed with illustrations in the "American Practitioner" for July, 1871, and you will see, by the italics, which are copied from the original article, that the whole novelty of the treatment consists in the very fact of making *tense* the fibres of the clavicular portion of the pectoralis major muscle and keeping them so: . . . "I formerly commenced the first plaster on the inner side of the biceps; but I found that that muscle would roll around and the plaster would lose its hold, requiring to be renewed occasionally; and, if it completely encircled the arm for the purpose of a stronger attachment, it would arrest the circulation, and thus prove dangerous. I have therefore adopted the following plan: strong and good adhesive plaster (Maw's moleskin is the best) is cut into two strips, three to four inches wide (narrower for children); one piece long enough to surround the arm and go completely around the body, the other to reach from the sound shoulder around the elbow of the fractured side and back to the place of starting. The first piece is passed around the arm just below the axillary margin, and pinned or stitched in the form of a loop sufficiently large to prevent strangulation, leaving a portion on the back of the arm uncased by the plaster. The arm is then drawn downward and *backward* until the clavicular portion of the pectoralis major muscle is put sufficiently on the stretch to overcome the sterno-cleido-mastoid, and thus pull the inner portion of the clavicle down to its level. The plaster is then carried smoothly and completely around the body, and pinned to itself on the back to prevent slipping, as seen in Fig. 1. This first strip of plaster fulfils a double purpose: first, by putting the clavicular portion of the pectoralis major muscle on the stretch, it prevents the clavicle from riding upward; and, secondly, acting as a *fulcrum* at the centre of the arm, when the elbow is pressed downward, forward, and inward, it necessarily forces the other extremity of the humerus (and with it the shoulder) *upward*, *outward*, and *backward;* and it is kept in this position by the second strip of plaster, which is applied as follows: commencing on the front of the shoulder of the sound side, drawing it smoothly and diagonally across the back to the elbow of the fractured side, where a slit is made in its middle to receive the projecting olecranon. Before applying this plaster to the elbow, an assistant should press the *elbow well forward and inward* (Fig. 2), and retain it there, while the plaster is continued over the elbow and forearm (pressing the latter close to the chest, and securing the hand near the opposite nipple); crossing the shoulder at the place of beginning, it is there secured by two or three pins, as seen in Figs. 2 and 3."

Having treated all fractured clavicles in this manner for the past fifteen years, and repeatedly dressing them before the class at Bellevue Hospital, you can well imagine my surprise at your reviewer dating my knowledge on the subject only as far back as Dr. Moore's address at Albany in 1871.

Respectfully yours, etc. LEWIS A. SAYRE.

March 15, 1873.

Public Health Association.—The Executive Committee of the American Public Health Association have decided to hold the annual meeting on Thursday, May 1st, in Cincinnati. Members will therefore be able to attend the meeting of the American Medical Association, to be held in St. Louis the following week.

Bibliographical and Literary Notes.

Art. I.—*The Treatment of Syphilis with Subcutaneous Sublimate Injections.* By Dr. George Lewin. Professor at the Friedrich Wilhelm University, and Surgeon-in-Chief of the Syphilitic Wards, and Skin Diseases, of the Charité Hospital, Berlin. Translated by Carl Proegler, M. D., late Surgeon in the Prussian Service, and in the United States Army, and E. H. Gale, M. D., late Surgeon United States Army. Philadelphia: Lindsay & Blakiston, 1872.

Prof. Lewin's book is a valuable monograph on the very popular method, first practised by him, of treating syphilis by subcutaneous injections of corrosive sublimate. Although nearly seven years have elapsed since the introduction of this unique practice, it is only very lately that it has been used in this city, and the success attendant upon the trial bids fair for a general acceptance. As is the case with all new remedies, this has been abused by application to inappropriate cases, and the ill results that followed ascribed to every thing except the ignorance of the physician. It is to be said, to Prof. Lewin's credit, that he is far from being so enthusiastic as to advocate his method in all cases of syphilis, and those who purpose using injections will do well to read this book, and learn caution.

The statistics of eight hundred cases, treated by the author, show many advantages of this over other methods of dealing with syphilis, not the least of which are the relatively short duration of treatment, and the small quantity of the drug necessary for cure—two and a half to three grains.

Of the relapses, Prof. Lewin says that, compared with other methods of treatment heretofore used at the Berlin Charité, "17 per cent. of least progressive forms, 25 per cent. of less adequate forms, and 43 per cent. of more regressive forms of syphilis" characterized the relapses in a certain number of sublimate-injection cases as compared with an equal number of cases treated by other methods.

The professor's usual formula is 2.4 grains of sublimate to the ounce of water. It should be stated that in the

Lancet, for July 20, 1872, is given the formula of Dr. Staub, of Paris, for an albuminous solution of sublimate in alkaline chlorides, by which, it is claimed, all local accidents of injection are obviated.

Art. II.—*Hysterology: A Treatise, Descriptive and Clinical, on the Diseases and Displacements of the Uterus.* By Edwin Nesbit Chapman, M. A., M. D., late Professor of Obstetrics, Diseases of Women and Children, and Clinical Midwifery, in the Long Island College Hospital. New York: Wm. Wood & Co., 1872.

An experienced book-reviewer never fails to look carefully at the title-page and preface of the work submitted to him for his judgment. He can usually form an impression of the character and ability of the author by the method and manner displayed in presenting his work to his readers. Exceptions do occur, and the volume on Hysterology assists in proving the rule. Why Dr. Chapman published this work is a conundrum not easily answered. He, in fact, affords in his preface the very best reasons why he should not have done so. It appears to be a sort of apology for having accepted a chair in a college, which he was incapable of filling with any credit to himself, or advantage to his students. For this conscientiousness he certainly deserves praise. There are many others who doubt their own skill and competency, and hesitate to speak with authority, but they generally confine their efforts to the journals. Dr. Chapman, however, comes boldly before the profession with a large octavo volume of five hundred pages. In external appearance it will rank with many of the best works on Gynæcology, but the contents are made up mostly of old materials, and the little bits that are new are of a very flimsy texture. A large portion of the book is devoted to incomplete or unintelligible records of cases. "The body of the work is a reproduction of the author's lectures on the diseases and displacements of the uterus." The author entertains crude and imperfect ideas of the inflammatory diseases and displacements of the uterus, but his earnestness forces us to believe that he has faith in his own views, peculiar and antiquated as they are. The style of the work and the language used are extremely bad. It is difficult to understand how one graduated from a school that confers degrees in arts could display so limited a knowledge of the elementary principles of rhetoric. The absurdly sensational character of many passages is particularly out of place in a medical work. But we find fault with the volume chiefly because we believe its teachings to be about two centuries behind the age, and actually dangerous to the younger class of the profession.

ART. III.—*Fistula, Hæmorrhoids, Painful Ulcer, Stricture, Prolapsus, and other Diseases of the Rectum, their Diagnosis and Treatment.* By WILLIAM ALLINGHAM, Fellow of the Royal College of Surgeons, England, Surgeon to St. Mark's Hospital, etc. Second edition, revised and enlarged. Philadelphia: Lindsay & Blakiston, 1873.

WE had occasion to notice the first edition of this volume with approbation, in the JOURNAL for January, 1872, and our good opinion is evidently borne out by the demand for a new edition. Treating of a class of painful diseases that prevail in all civilized communities, and regarding which the information of the general practitioner is often vague and unsatisfactory, the book appears to have been very cordially welcomed. The additions in the second issue relate chiefly to treatment, though various corrections are apparent throughout. As a safe and practical guide in the diagnosis and management of diseases of the rectum, this work is one of great value to the profession.

Art. IV.—*First Decennial Catalogue of the Trustees, Faculty, Officers, and of the Alumni, of the Bellevue Hospital Medical College, of the City of New York, from* 1861 *to* 1871. Compiled by Frederick A. Castle, M. D., Historian of the Alumni Association, preceded by a History of the College from its Organization to 1872, by Leroy Milton Yale, M. D., President of the Alumni Association. New York: D. Appleton & Co., 1873, pp. 66.

The Alumni of Bellevue Hospital Medical College have every reason to feel proud of their first catalogue, both as regards its arrangement and general appearance, and the substantial results which it exhibits. The total number of graduates from 1861 to 1871, inclusive, is 1,091. The names and addresses of all except eighteen, who have become irregular, are given in the catalogue.

Books and Pamphlets Received.—Diseases of the Urinary Organs; including Stricture of the Urethra, Affections of the Prostate, and Stone in the Bladder. By John W. S. Gouley, M. D., late Professor of Clinical Surgery and Genito-Urinary Diseases, in the Medical Department of the University of New York, Surgeon to Bellevue Hospital, etc., etc. New York: William Wood & Co., 1873.

The Science and Art of Surgery. Being a Treatise on Surgical Injuries, Diseases, and Operations. By John Eric Erichsen, Senior Surgeon to University College Hospital, London, etc., etc. A new edition, enlarged and carefully revised by the author. Illustrated by upward of Seven Hundred Engravings on Wood. Philadelphia: Henry C. Lea, 1873. Two vols.

The Retrospect of Medicine, being a Half-Yearly Journal, containing a Retrospective View of Every Discovery and Practical Improvement in the Medical Sciences. Edited by W. Braithwaite, M. D., and James Braithwaite, M. D. Vol. lxvi. July to December, 1872. London: Simpkin, Marshall & Co., 1873.

Epidermiology; or the Remote Cause of Epidermic Diseases in the Animal and in the Vegetable Creation. By John Parkin, M. D., F. R. C. S., Corresponding Fellow of the Royal Academies of Medicine and Surgery in Madrid, Barcelona, and Cadiz, etc. Part I. London: J. & A. Churchill, 1873.

The Medical and Surgical History of the War of the Rebellion (1861–'65). Prepared in accordance with Acts of Congress, under the Direction

Surgeon-General Joseph K. Barnes, U. S. A. Two vols. Washington: Government Printing-Office, 1870.

A Hand-Book of Post-Mortem Examinations, and of Morbid Anatomy. By Francis Delafield, M. D., Curator to Bellevue Hospital, Pathologist to the Roosevelt Hospital, etc., etc. New York: William Wood & Co., 1872.

Lessons in Elementary Anatomy. By St. George Mivart, F. R. S., Lecturer on Comparative Anatomy, at St. Mary's Hospital, author of "The Genesis of Species." London: Macmillan & Co., 1873.

Catalogue of the Officers and Alumni of the Bellevue Hospital Medical College, from 1861 to 1871. New York: D. Appleton & Co., 1873. Price 25 cents.

Reports on the Progress of Medicine.

OBSTETRICS AND DISEASES OF WOMEN.

1.—*On the Diseases and Functional Disorders of the Sexual Organs in Women, as an Exciting Cause of Insanity.* By Prof. Fordyce Barker. [Journal of the Gynæcological Society of Boston, May, 1872.]

Your text-books on midwifery and the diseases of women fully treat of insanity as developed by pregnancy, parturition, and lactation, but they make but slight reference to the influence of the sexual organs in bringing out this calamity under other conditions. I therefore take the present occasion to call your attention to this subject, as every one of you will probably meet with more or less of such cases in your practice. The influence of the female organs of reproduction in developing insanity is well understood by alienists, and has been fully discussed by writers on mental diseases, as Griesinger, Maudsley, Skae, Tuke, Bucknill, and others. Little, however, has been written on the subject by Gynæcologists, with two notable exceptions. Dr. Horatio R. Storer, of Boston, made a very suggestive and able report to The American Medical Association, on the causation and treatment of reflex insanity, and Prof. Louis Mayer, of Berlin, published in the transactions of the Obstetrical Society of that city an elaborate paper on the relations of the female sexual organs to mental diseases.

Now, there are certain elementary facts in regard to this subject which are recognized and understood by every observing physician, and my statement of these points will, I am sure, be accepted by the whole profession.

With the development of the functions of the reproductive organs there is a corresponding development of the nervous susceptibilities and sensibilities, the emotions and passions are largely extended, the imagination becomes lively, the intellectual powers more vigorous, and, in fact, a wonderful change takes place in the whole moral and mental organization. But, if, at the period of puberty, these organs are undeveloped, and their functions are not established, the woman is imperfectly formed, her intellectual and moral growth is blighted, and her general appearance and character are languid and unhealthy. To become a complete woman, she requires those great changes in the nutritive, circulating, and nervous systems' which constitute puberty. Furthermore, in most women during menstruation, there is a marked change in the temper and disposition. Little things worry and annoy them, they are capricious, irritable, and jealous, and, in some, these traits are so conspicuous as to really amount to disease. All moral causes act more powerfully at these times, and many, who are well during the intervals, at the menstrual periods are sad, melancholy, hysterical, with curious moral perversions, which are very striking. It would seem that the functions of ovulation and menstruation so tax the vital powers, in some, as to disturb the cerebral functions. Now, appreciating these phenomena which are physiological in most women, you will be prepared to believe that a pathological condition of these organs, and an impairment or arrest of their functions, may be a cause of great disturbance of the circulating and nervous systems, and may result in absolute derangement of the cerebral functions. Although these are scarcely referred to by the systematic writers on female diseases, yet every one who has had much clinical experience in these diseases must have seen results more or less frequently. Every insane hospital probably contains more or less of such cases, and the special writers on mental diseases furnish numerous illustrations of this fact. Dr. Skae, who has charge of one of the largest insane asylums of Scotland and who ranks very highly as a writer on insanity, would make a special class of those cases of insanity which occur at puberty, and depend apparently upon the changes affecting the circulation and nervous system by the development or failure of development of the functions of the sexual organs. He believes that the insanity then occurring presents certain characteristic features most commonly manifesting themselves in the form of mania, sometimes accompanied by epileptic fits. In Maudsley's work on the "Physiology and Pathology of the Mind," he says that M. Aran investigated the histories of seven cases of melancholia, with suicidal tendencies, and one case of simple melancholia with dangerous tendencies, and one case of hystero-mania, and found there were granulations of the neck of the uterus in five cases. There was anteversion of the uterus, with congestion of its neck and ulceration of the inferior lip, in one case, and there was painful engorgement of it with leucorrhœa in another. In short, I may say that the number of cases of insanity which arise from diseases of the sexual organs in females, such as dysmenorrhœa, amenorrhœa, menorrhagia, uterine and ovarian displacements, inflammation, and other organic affections of these organs, the new relations, mental and physical, resulting from marriage, and by the change of life, which are found scattered through medical literature, and which have been reported by trustworthy and competent authorities, will, I am sure, greatly astonish those who have paid little attention to this matter. Indeed, I may say that the importance of this subject seems to be very little appreciated by the profession generally, and that, in many instances, the happiness of the sufferer and of her family, and the misfortune of even a temporary residence in an insane hospital, may turn on the knowledge of these facts by the family physician. The proof that the insanity is due to some disturbance or disease of the sexual organs is demonstrated by the fact that the insanity disappears when the local disorder is cured. No fact in medicine has more authentic evidence to verify it than this. Griesinger, in his remarkable work on "Mental Diseases," speaks in severe terms of the truly childish delicacy which exists at the present time among asylum physicians in regard to vaginal examinations and the use of the speculum, and quotes, from other writers and from his own practice, cases of recovery from insanity by means of local treatment of the genital organs. Perhaps you will be more impressed by my personal clinical experience than by my reference to authors. I shall, therefore, exemplify these points by a brief detail of some of the cases which I have seen.

Of cases of insanity which were induced by amenorrhœa (I say so because the cure of amenorrhœa was followed by an entire disappearance of the insanity), I have seen two. A lady of remarkable beauty first began to menstruate at seventeen, the periods never lasting over two days, with a very scanty discharge, and attended with very great pain. She married at twenty. A few months after marriage, each menstrual period was characterized by a kind of hysterical mania, as I should judge from the description of the attacks, as given to me. Twenty months after marriage the menstrual discharge entirely ceased, and she was supposed to be pregnant. She suffered from gastric irritability, became very stout, and complained of almost constant headache and nausea, and the monthly exacerbations of mania continued with increasing violence. Her whole character seemed to be transformed. She had been remarkable for her sweetness of temper, her thoughtfulness for others, and her kindness to her servants, and her efforts to please all who came in contact with her. She now conceived the most violent aversion to those whom she had formerly most loved, her husband included. No servant could be induced to stay with her but a short time, and at times she would give way to a violence of conduct which threatened danger to those near. She was constantly repeating stories of the insults and improper advances made to her, of the most unpardonable injuries she had suffered from the alleged culprits, who were frequently those friends who best loved her, and who had much to forgive. At the supposed fifth month of pregnancy she was placed under my care. The monthly exacerbations of her mental disturbance, in connection with the antecedent history of her case, made me suspicious of the reality of the pregnancy, and after some time, with considerable difficulty, I obtained a vaginal examination. I found an undeveloped uterus. The vaginal cervix felt like a small nipple projecting into the vagina, and, examining by the rectum, I felt convinced that the whole uterus was not larger than the first phalanx of my little finger. The region of both ovaries was very sensitive to pressure, and this was the only pain that she complained of from the examination. As this was just the beginning of the monthly exacerbations, I at once had twelve ounces of blood taken by wet cups, applied over the lowest part of the back. The usual symptoms were greatly mitigated, and her headache quite relieved by the cupping. Then I commenced the daily use of metallic bougies in the uterus, until the cavity of the uterus was sufficiently enlarged to contain a very small compressed sponge. The cupping was repeated at the two succeeding monthly periods. The uterus notably increased in size, and, at the fourth period after I commenced treatment, menstruation came on two days before it was anticipated, was very abundant, and, for the first time in her life, the discharge continued without pain for five days. She now became quite herself, her temper resumed its former sweetness, and all moral and intellectual perversion disappeared. A few months after, she became pregnant. Her accouchement was normal and happy, but lactation, which was a very active function in her, was developed with a severe attack of acute mania, which lasted, however, only four days. Now, my theory of this case is this: The ovarian functions were highly developed and very active. The undeveloped uterus did not permit the relief of the physiological congestions which accompany ovulation, and hyperæmia of the brain with a disturbance of its functions resulted.

Contrast this case with the following: A young lady, twenty years of age, was abruptly told that the gentleman to whom she was engaged had been killed in the battle of the Wilderness. I may interrupt my history by mentioning that, although he was severely wounded, and his death was reported in the papers, he is now her husband. On hearing the news, she fell unconscious upon the floor. When she came out of the swoon, hysterical delirium came on, with manifestations of great pain in the lower part of the abdomen. She was menstruating at the time, and this was suddenly arrested. In a few days she changed from a state of loquacious delirium to one of taciturn melancholy, except for two or three days each month, when she would talk very loudly, rapidly, and incoherently, interrupted only by violent weeping. But there was no menstruation. When I saw her five months afterward, her appearance was very repulsive. Her face was covered with acne, and with the marks that she had made with her finger-nails. She would answer no questions, except by an occasional monosyllable, and her constant occupation was, tearing the sleeves of her dress. She was emaciated, and very anæmic, although she was said to take as much food daily as when in full health. Her breath was singularly offensive, so much so as to strike me forcibly, and to lead me unfortunately to ask her mother "if there was not a dead rat or mouse in the wall of the house?" Her distressed look reproached me, as she answered, "It is my daughter's breath which you notice." I had been called in by the attending physician with the belief that I would impress upon the parents the importance of sending her to an asylum, and join with him in signing the necessary paper. He felt this to be of the greatest importance, as the mother's health was fast breaking down. But I soon saw that such a suggestion would not be listened to. She had been under a full tonic treatment, and I could only propose some change in the details, viz., the chlorate of potassa, tincture of the muriate of iron, and strychnia, in the place of the other tonics which she had been taking. A few days after I saw her again, and this was the time of her monthly exacerbation. It appeared to me that there were some erotic manifestations in her features and movements, and, as her physician thought that he had observed the same at these times, I proposed to him that we should make a speculum examination. She was, therefore, anæsthetized by chloroform, and with some difficulty I made a thorough digital examination, and introduced a small speculum. The cervix was large and very congested, and the os was filled with a tenacious plug of mucus. When this was removed, I applied the solid nitrate of silver over the surface of the vaginal cervix, and then passed it as far as possible into the canal, when about half an inch broke off, remaining in the canal. I passed through the speculum a pledget of cotton batting, saturated with salt water, and, pressing it with the forceps against the cervix, withdrew the speculum. The next day the menstrual discharge came on freely, and continued six days. In the following three weeks, I applied the nitrate of silver twice. From this time menstruation was normal. Her mental condition began to improve in the most manifest and striking manner, and, in six weeks from the time of the first application, she was perfectly restored. It is a curious circumstance that she saw her betrothed for the first time, just as the third menstrual period after her recovery was ending. This interview was followed by a severe uterine hæmorrhage. I was called to see her in the night, and was obliged to tampon. Now, although she was at least two months recovering from the anæmia induced by the hemorrhage, there was not the slightest intellectual disturbance.

A third case differs essentially in its result from either of those mentioned. In October, 1856, I visited a young lady of twenty-two, in consultation, and from her physician learned the following history of her case: She had begun to menstruate at fifteen, but the periods had never been exactly regular as to their recurrence; the discharge was always very scanty, and never continued more than two days. Without any known cause, or a notable change in her general health, menstruation ceased altogether five months before I saw her. The symptoms of general ill health were not very marked, she complained of nothing, but for three or four months a change had been gradually taking place in her character. She had lost all interest in former pursuits and pleasures, given up her music, of which she had been passionately fond, had become morose and irritable, would sit all day silent, listless, and idle, she had given up all intercourse with former intimate friends, and for some weeks she had greatly distressed her parents by refusing to be present at family prayers, or attend church. Two weeks before I saw her, she informed her mother that she had broken off her marriage engagement, and her mother, a hard, religious woman, who insisted that her family should always act in accordance with her stern sense of duty, had bitterly reproached her, telling her that she regarded her as wicked for breaking her marriage engagement as though she had broken her marriage vows, as the heart, she said, was the same in both. Since this conversation, she had persistently refused to speak to or in any way notice her mother. When I was requested to see her, I was emphatically informed that I must not suggest any local examination, as her mother would not permit her daughter to submit to such a thing. Of course, the consultation had no practical result. Three mornings after I saw her she was found dead in her bed. To prevent a coroner's inquest, her parents had consented that a *post-mortem* examination should be made if only two were present, and her physician requested me to assist him. At the appointed time, as I was engaged with an obstetric case, I asked the late Dr. David Conant to take my place, and he was certainly as competent a man as we had in the profession to make such an examination. The autopsy absolutely revealed nothing to explain the cause of death. The only points of interest that it revealed were, that the evidences of intact virginity were conclusive. The ovaries were normal as to size and structure, but somewhat congested, and on one was the most marked and beautiful specimen of recently ruptured Graafian vesicle that I have ever seen, while the uterus was less than half the size of the normal virgin uterus. Its cavity did not contain one drop of blood, but its lining membrane had numerous points of ecchymosis. The day after the burial of the poor girl, an old servant of the family, who had been her wet nurse in infancy, called upon me, and with a mysterious air drew from her pocket a half-ounce phial, labelled "Magendie's solution of morphia," and asked if I supposed that this, which she had found empty under her pillow, had any thing to do with her death. I advised her not to mention the circumstance to any living being, but to leave the phial. From the druggist whose name was on the phial, I found that it had been sold a few days before to one of our leading dentists. On calling upon him to make inquiry, he was very much surprised that such a phial was missing from some shelves where he had placed it, and it had never been opened by him.

He consented to allow me to look at his list of patients for the last few days, without giving him any reason for my request, and I found that this poor girl had been there the day before her death. Is there one of you who would feel any hesitation in assigning a cause for the suicidal insanity in this poor girl? I subsequently asked the attending physician how he made out the burial certificate. His reply was that, as the autopsy utterly failed to explain the cause of death, he had supposed it must have been due to spasm of the heart, so he had assigned angina pectoris as the cause of death. I did not consider it necessary to make any comment on his reply.

I have seen two cases in which insanity seemed to result from menorrhagia, probably inducing anæmia of the brain. The mental derangement disappeared when the menorrhagia was cured, and the anæmic condition was overcome.

But one case of insanity from uterine displacement has come under my observation, and this was so peculiar that I will give you the history of the case: I was called one evening to see a lady about thirty years of age, the mother of two children, the youngest being about two years of age. She was suffering from a most intense headache and throbbing, especially ascribing these sensations to the base of the brain. Her countenance was very much flushed, the conjunctiva highly injected, and her manner of speaking, jerky, and quite unnatural. For some days she had suffered from pain in the region of the sacrum, which seemed gradually to extend up the whole length of the spine, until it culminated in this intense throbbing pain at the back of the head. From these and some other symptoms, I was led to make a vaginal examination, when I found the uterus extremely retroverted, and enlarged to about twice the normal size of the unimpregnated organ. I replaced the organ, and in a very few moments she declared that all pain in her head and back had disappeared. I should mention that she had a very broad, capacious pelvis. I visited her two days afterward, when she said that she was perfectly well. I found, on making an examination, that the uterus was quite in place, and to my great surprise it was apparently not more than half the size that I had found it two evenings before. I suggested no treatment, as there seemed to be no indications for any. In the course of the following three months, I was several times sent for to replace the organ, the symptoms being the same, though much less in degree than those which had been manifested when I was first called.

It was very remarkable how congested the organ would become when it was retroverted, and how rapidly it would resume its normal size, after it was replaced. Her husband, a very able lawyer, declared that he could always tell when the organ was displaced, by the fulness, redness, and expression of her face. I proposed, what I very rarely make use of, to introduce a pessary, but it was objected to. One evening, after an absence of four days from the city, I found an urgent call to visit her. Her husband also had been at Albany the same length of time as I had been away. From the mother, who lived with her, I learned that she had been suffering for three or four days with pain in the back and head, and, what was never before seen in her, she had been excessively irritated and ill-tempered.

That morning, she, whose sweet, affectionate nature had always been remarkable, had beaten her little girl most cruelly. After doing this she had spoken to no one, would answer no questions, and about one o'clock she undressed and went to bed. Some hour or two after, when her mother went into the room, and spoke to her, she replied by spitting at her, and from this time she had kept up an incessant spitting on her night-dress, the sheets and pillows, and particularly at the face of any one who spoke to her. When her husband returned, and attempted to greet her with a kiss, as was his wont, she not only spit in his face, but violently seized his hair, and it was with a great deal of difficulty that her hands were detached. On my entering the room her spitting was furiously directed toward me. I found the uterus retroverted, and, if I may use the expression, packed down, so that it required some force to replace it. As soon as this was done, she loudly ejaculated, with a kind of satisfied grunt, "There, now!" and at once ceased spitting, and became perfectly quiet, and before I left the room she fell asleep. On visiting her the next morning I was surprised to see her sitting at the breakfast-table, smiling and happy. She made no allusion to her disturbed condition of the past four days, nor did I, but I told her that I had decided that she must wear an instrument, and, after the trial of several, I finally adjusted a Hodge pessary.

She wore this nearly a year; in fact, until she was three months advanced in pregnancy. It is now six years, and there has been no recurrence of the displacement, or mental trouble.

But to pass on to other points. I have seen several instances where the insanity was principally manifested by sexual hallucinations, in connection with uterine and ovarian disease. This is said by alienists to be *par excellence* the insanity of old maids. At the change of life, the milder forms of monomania, manifested by religious depression, remorse, exaggerated apprehensions of disease, or of poverty, are, in my experience, not uncommon. In two cases, the return of menstruation, at intervals of two, three, or four months, was ushered in by attacks of acute mania, characterized by overwhelming terror and fright. This condition lasted only a day or two, when the patients relapsed into their former condition of quiet gloom and indifference as regards every thing pertaining to their own interests, or those of their family.

In one, a lady of high social position, refinement, and strong religious feelings, there was, for a period of three years, an excessive indulgence in alcoholic drinks. The quantity she would take, and got by all sorts of means, was absolutely enormous. But, after the climacteric period was passed, she entirely and voluntarily gave up these habits, and she has for some years been in perfect health, physically and mentally.

In but one case, within my professional experience, has the insanity which was developed at the climacteric remained permanent, and in this case the hereditary tendencies were most undoubted. Her father and grandfather both committed suicide; her parents were first cousins, and she had an epileptic sister.

But, perhaps, the most pitiable condition under which insanity is developed, as a reflex irritation of the brain from disease in the functions of the sexual organs, is that which immediately follows marriage. I have known seven cases of this kind; in two of these death occurred within eighteen months, the insanity becoming complete dementia. The other five entirely recovered, and are now happy wives, as far as I can judge. One was insane for nine months. She was in an asylum, and voluntarily remained three months after her recovery, to be sure that it was permanent. It is now seven years since, and she still speaks in the warmest terms of gratitude and affection of Dr. Tyler, of the McLean Asylum in Massachusetts, where she was treated. I should not omit to state that I have attended three of these patients during confinement, and I watched with great anxiety for some manifestations of puerperal mania, but neither of them exhibited the slightest tendency to it. One of these cases was so singular that I will briefly relate it to you. On the night of her marriage, when the husband entered his chamber, he found his bride in her night-dress kneeling by the bed. She at once arose, and throwing her arms around his neck, and weeping bitterly, she said that she had a confession to make. She had had relations with another gentleman, and she was now *enceinte*, and felt the motions of the child. Of course the marriage was not consummated. The next day she was returned to her father's house. She told her story so calmly, and with such detail, that it was fully believed by her parents, and no insanity was suspected by any one. The case was most judiciously concealed from the world, no whisper of it going beyond a very small number of her immediate family. She lived entirely secluded in an upper room of her father's house, passing her time in religious exercises, reading religious books, and in making baby-clothes. Four months after her marriage, I was engaged to attend her in her confinement.

Some anomalous symptoms led me to insist upon an examination, which I did, after placing her under chloroform, and found the evidence conclusive that she was anatomically as much a virgin as on the day of her birth.

The abdomen was as large from tympanitis as it should be at the full term of gestation. This disappeared in a great measure while she was under the influence of the chloroform, but the enlargement returned as soon as she came out from under the effect of the anæsthetic.

Her hallucination continued for two months longer, when she got double pneumonia from obstinately refusing to have a fire in her room, and for some days I thought there was no chance of her recovery. During this illness the tympanitis entirely disappeared, and the abdomen remained very flat. When she recovered from the low delirium, which had continued for some days of her illness, her delusion was gone. She spoke of it with great freedom, remembered every incident of her marriage, and the revelation she had made, and then said that she never in her life had spoken to the gentleman, a married man, whom she had believed to have impregnated her. I afterward ascertained that he did not even know her by sight.

I wrote a statement of the case to her husband, who was in Europe, and, some months after her recovery, she with her father and mother went abroad to join him. She has now three children, one born in Europe, and two in this city.

I must not conclude without a caution to you not to accept, without other proof, the manifestation of sexual feelings, as evidence of disease of the sexual organs in the insane. These manifestations have undoubtedly often a centric origin, and are the reflex phenomena of the disturbance of the brain. In remembering the influence of the organs of the body upon the mind, we should also remember the influence of the mind on the body.

Translations.

Prepared for the New York Medical Journal by Alfred E. Walker, M. D.

Hypodermic Injections of Calomel for Syphilis. (*Giornale Ital. delle Mal. Venere e delle Pelle*, October.)—Drs. P. Pirocchi and P. L. Porlezza make an end, in this number, of their account of fifty-five cases of syphilis, and give a *résumé* of results. All the cases that have come to them since August, 1871, they have treated hypodermically with calomel; and all are included in the report, except where there was some obscurity of diagnosis, or where they lost sight of the patients. Of forty-four cases showing secondary symptoms, thirty-five were cured, and nine were improved. In seven of these cases there was afterward a reappearance of secondary symptoms of a milder character than the first, four of which were cured in the same way. The average number of injections was two and a half: the whole amount of calomel for each individual, 44.6 centigrammes; the number of days required for the result, thirty-five and a fraction. The repeated symptoms were cured, in the four cases treated, in (average) sixteen days, with one and a quarter injection each. Of ten cases of tertiary syphilis, six were cured, and four improved. In two cases the symptoms reappeared in a milder form, both cured. The average number of injections was four and a fifth; the whole amount of calomel per individual, 79.5 centigrammes; the number of days required for the result, thirty-five and a fraction, excepting one very unfavorable case treated for several months with some benefit, not resulting in a cure. The repeated symptoms required: one, two injections; the other, one; and the average time required was twenty-two days. To the objections urged against the method, these gentlemen reply in substance as follows: 1. The *local reaction* to the injection. Of the one hundred and fifty-three injections practised, one hundred and seventeen gave rise to mild abscesses, eight to "intense reaction," sixteen to gangrenous sloughs; in thirty cases these interfered with the progress of the cure. The worst forms of local reaction were due to exceptionally unfavorable conditions of the patient, to a bad choice of the place for injection, to faults in the operative procedure, to impurity of the remedy, to the use of excessive doses, or to the neglect of precautions, such as smearing the part with collodion, as recommended by Prof. Scarenzio, to prevent erysipelas and limit the abscess. There was never any sloughing when care was taken to pierce the skin and deposit the calomel in the subcutaneous connective tissue. The abscesses were an inconvenience, and sometimes, when at their height, prevented the patient, especially laborers, from attending to their work; but the inconveniences were slight compared with those attending a course of the ordinary treatment; and they never deterred the patients from submitting to a second injection. 2. *Stomatitis.* It is a mistake to suppose that this method is especially liable to this unpleasant result. Of the fifty-five patients, only six showed signs of stomatitis; and in only one was it serious and persistent enough to require special attention. Though calomel is the form of mercury most likely to salivate when given by the stomach, it is the least likely to when injected hypodermically, because of its very slow absorption. Of two hundred and thirty cases treated by Scarenzio's method (injections of calomel), only twenty-two showed stomatitis, that is, nine per cent.; while Lewin and Grümfeld with injections of corrosive sublimate produced stomatitis, the former in thirty-seven per cent. of his cases, the latter in twenty per cent. Other physicians have seen grave stomatitis result from injections of calomel more frequently than the present writers, but it has been caused by the exceptionally unfavorable circumstances of the patient, or by the use of very large injections, forty centigrammes at a time. 3. The *return of symptoms.* The statistics relative to the recurrence of syphilis after different forms of treatment are so contradictory as to be almost worthless. It may be assumed, however, that, as Bärensprung says, "The recurrence of syphilis, after any method of cure, is not the exception, but the rule." The cases under consideration now are too recent to afford evidence on this point. Where the symptoms did reappear, they were regressive; that is, milder than the previous ones. In conclusion, the following principles may be laid down: 1. The injection should be at the middle of the outside of the arm. 2. Pierce the skin entirely, guarding particularly against depositing the calomel in the skin itself. 3. The best vehicle for calomel is hydrate of gum. 4. The quantity of calomel should be from ten to twenty centigrammes. 5. Smear the part with collodion. 6. Let ten days, at least, intervene between the injections. 7. If an abscess forms, open it at once. 8. Desist from the injections if the first two produce little or no benefit.

Normal and Pathological Anatomy of Pavement Epithelium. (*Giornale Ital. delle Mal. Ven. e delle Pelle*, October.)—Luigi Griffini, from the laboratory of experimental pathology of the University of Pavia, contributes an essay on this subject, apparently the product of careful experiments of his own, and due consideration of the opinions of others. The most important points are the following: The epithelial cells of the skin and mucous membrane are joined to one another by ciliary processes which issue from each cell in all directions. The processes from the lower side of the lowest layer of the rete mucosum pentrates the tissue beneath. Between the ciliæ are interciliary spaces. Those who deny the existence of this structure have failed to find it, because they have prepared specimens for section by use of too strong solutions (one-half per cent.) of chromic acid, which produce a contraction of the tissue. The writer hardened the tissues by congelation, by one-quarter per cent. solution of chromic acid, or by one-half per cent. solutions of chromate of potash. The foot-plates (*Fussplatten*) found by Lott in the lowest layer of the epithelium of the cornea are an optical illusion. The writer's observations were made on sections of the cornea of frogs and rabbits, on bits of skin grafted in ulcers, on the condylomata surrounding small-pox pustules, or the bullæ of miliaria and on normal epithelium from the mouth and from glands. In regard to the *reproduction of epithelium*, his experiments led him to the conclusion that solutions of continuity are repaired in part by cleavage of preëxisting epithelial cells; for he finds cells in different stages of the process, but not in numbers sufficient to ascount for the whole increase of substance. He sees no positive reason to believe that the independent automatic cells (white blood-corpuscles) are meatamorphosed into epithelium. The epidermis is raised by pus, because, the interciliary spaces being abolished, the white corpuscles cannot pass through the outer layer in cells. In *transplantations of skin*, the epidermic layer of the graft is removed by pus, the result of an inflammatory process. The rete mucosum sends out prolongations into the granulations. If subcutaneous tissue is included in the graft, it contracts no adhesions below the rete mucosum; that is, the subcutaneous tissue is useless. A strip of linen covered with cerate is better than sticking-plaster to retain and protect the graft. The writer has never seen any failure of adhesions on the part of grafts of not more than two to four millimetres in diameter, held by linen strips. In *small-pox pustules* the cavities and trabeculæ are produced by a threefold process: 1. The cells of the rete mucosum are infiltrated with serum, and their protoplasm softened; 2. This atrophy of the protoplasm, going on centrifugally, reduces the cells to vesicles, which, fusing into one another, constitute the primary cavities; 3. The enlargement and stretching of these purulent cavities, as the epidermis is elevated, complete the process. The nucleoli of the cells are not altered, but generally escape when the cell or cavity is opened by section. An *epithelioma*, which the writer had studied, has its minute anatomy described in detail. The most remarkable point noticed was the vascular arrangement. The "*plugs*" of epithelial cells in the alveolæ did not completely fill them, but were surrounded by spaces constituting venous lacunæ. The writer was advised and directed in his experiments by Prof. Bizzozero.

Ergot and French Midwives. — Considerable attention is paid by recent French journals to a discussion in the Paris Academy of Medicine, about allowing midwives the use of ergot. It appears that ergot has hitherto been on the list of poisons which an apothecary must not dispense, except on the order of a physician. The Prefect of Police applied to the Academy of Medicine for advice, as to whether it would be well to allow midwives to order and use the drug; and on this took place the discussion, which seems to be characterized chiefly by a manly resolution to yield as little of the prerogative as need be. It was urged and reiterated that ergot, though very useful in some cases, cannot be given indiscriminately, and that midwives (even French midwives, especially educated and licensed) have not the discernment necessary for this delicate piece of discrimination. To be sure, the physicians—presumably gifted with the discriminating faculty—in the course of this very debate, expressed very diverse opinions about the indications for the use of ergot; one gentleman hardly ever used it, while others thought that under certain conditions it is very serviceable, administered, of course, with discrimination. And then, again, all the gentlemen knew well enough that it is the practice of most Paris physicians to use ergot in a thoroughly routine way, giving a dose after the birth of every child, to facilitate the after-birth and prevent hæmorrhage, a practice which must considerably lighten the mental strain of discriminating. Well, the end was, that the Prefect of Police was advised that it would be better if apothecaries were not allowed to give eagot on the order of a midwife, except when the order specified that the patient was suffering from dangerous hæmorrhage.

Cure of Tabes Dorsalis by Galvanism. (*Memorabilien*, June.)—Von Kraft-Ebing has four successful cases to report out of twenty-three. His method is to apply one electrode, no matter which, over the sacrum, and the other farther up on the vertebral column, according as the symptoms point to a lesion in the lumbar, dorsal, or cervical region. A sitting of five minutes takes place every day, if possible. If no improvement follows seven or eight sittings, he abandons them. The four cases which recovered under the treatment were as follows: 1. A woman, twenty-four years old, who, since a childbirth, two years before, had suffered various disorders of sensation, including the girdle-feeling; then trembling of the hands, double sight; and, finally, an uncertain gait, much worse when the eyes were closed. After the seventh sitting she was much better; and, after the thirteenth, seemed quite well. 2. An officer, wounded in the elbow, was laid up in bed for three months. At the end of this time he experienced a crawling feeling in his limbs, and neuralgic pains, increased reflex excitability, and an unsteady step, followed later by tremor of the hands and double sight. Twenty-one sittings cured all the symptoms, except paresis of the rectus externus of the left eye. 3. A woman, twenty-six years old, who for ten years had exhibited considerable ataxia in the movements of the legs and of the right eye, and felt various sensational disorders. Thirty-two sittings restored her so much that she could take long walks; but her motions never became perfectly steady. 4. A man of the same age, who had suffered several months from decided ataxia and pains in the limbs. After undergoing treatment for four weeks, only traces of unsteadiness remained.

Poisoning by Carbolic Acid used externally. (*Nuov. Ligur. Med.*, October 10th.)—Two men in Wurtemberg, troubled with scabies, received from a doctor a solution of carbolic acid, thirty grammes to two hundred and forty of distilled water, with a little alcohol to help dissolve the acid. One of them died in less than an hour after using it; the other lived, but had a bad night, and next day complained of a burning skin and a dull headache. The right hand with which he had done the rubbing was swollen for several days; and, wherever the acid had been applied, the epidermis came off. An autopsy performed on the dead man revealed intense lividity of the lips, ears, and nails; hyperæmia of the pia mater and cerebral sinuses, injection of the larynx, trachea, bronchi, and bronchioli; congestion of the lungs; the heart filled with thick, black blood; venæ cavæ superior and inferior, and the spleen, gorged with blood; right kidney much congested, and the muscular tissues of the heart quite red. Traces of carbolic acid were found in the blood taken from one of the jugulars. It was concluded that death resulted from asphyxia.

Muscular Sensation.—By the roundabout way of the *Gazette Hebdomadaire*, the *Revue des Sciences Médicales*, and *Archiv für Psychiatrie und Nervenkrankheiten*, we get the results of M. Bernhardt's experiments to determine whether the so-called "muscular sense" comes from the muscles or from some other source. The author does not deny a "sense of force," but claims that it may be only a consciousness of the degree of excitement in the nervous centre which acts on the muscle, or that it may be owing in part to sensations in the soft parts adjacent to the muscle. Bernhardt passes in review the various arguments *pro* and *con.* Spiess and Schiff pronounce decidedly against sensation in the muscles. Mechanical and chemical excitements of the muscles produce neither pain nor reflex movements, as has been shown by Pikford and Arnold. Cramps, indeed, cause pain, but this may result from compression of nervous filaments traversing the muscles. It is doubtful, moreover, whether the muscles receive sensory nerves; for it has been shown by Schiff that, after section of the anterior roots, all the muscular nerves after a while are found in a state of degeneration. The knowledge of the position of the limbs may come from the nerves of the tendons and of the soft parts about the joints.

M. Bernhardt arranged some pulleys at the foot of a bed, so that an unseen weight might be raised by the hand or foot. The experimenter determined first with what accuracy he could estimate the weight attached to the cord when raised by voluntary motions. Then he caused the muscles to contract by electric stimulus, and found that, in the absence of a volitional impulse, it was much harder to tell how much weight was raised.

Experiments on ataxic patients gave still more marked results. The results would be more decisive if one could completely eliminate the sensations produced by compression of the skin and soft parts; but this has not yet been accomplished.—*Gazette Hebdomadaire*, January.

Criminal Lunatics in Italy.—Prof. Dombroso, in *Clinica di Bologna*, gives the results he has obtained by visiting prisons and studying the papers submitted to him by the Minister of the Interior.

Of 14,484 prisoners in 1866–'67, 55 were insane; that is, but little more than one-third of one per cent. This number is remarkably inferior to those furnished by other nations. In Scotland twelve per cent. of criminals are insane; in England as many as sixty-four (!) per cent.; in the German penitentiary at Halle, five per cent. He does not infer from this that insanity is really more rare among Italian criminals, but attributes the figures given to the fact that the Italian public has not yet learned to attribute a large proportion of crimes to morbid impulses, so that many lunatics pass in the prisons for very ferocious, incorrigible villains, and not for lunatics. Another reason is, that Italy has not, like England, a number of asylums for insane criminals, and the ordinary asylums reject this class as too dangerous.

The fact is, that in all the penitentiaries there are solitary cells containing men who are unquestionably insane. In one prison Prof. Dombroso found a poor victim of pellagra condemned to fourteen years' imprisonment for the theft of a quantity of onions! During an attack of frenzy he had been impelled to run in a straight line for whole days, striking and destroying whatever came in way, after which he fell into a deep sleep that lasted twenty-four hours. When taken, he not only confessed the theft but declared that he ought to have his head cut off; and in spite of this, in spite of his refusing to take any food, trying to strangle himself, and exhibiting all over him the pellagrous erythema, in spite even of his having been twice in an asylum, he was convicted and sentenced for the theft. Another, whose father, grandfather, and brother were epileptics, and who, in a state of pure epileptic fury, had killed a man with whom he had no cause for quarrel, was sent to prison to serve out his punishment.—*Gazetta Medica Italiana-Lombardie.*

Digestion of Starch in Infancy. (*Gaz. Med. Ital.*, November, 1872.)—It has been known that the saliva of newly-born animals has not the power of transforming starch into sugar. A recent experimenter has taken the pancreas from kittens and puppies, and has ascertained that the pancreatic juice in these animals when young is, like the saliva, incapable of converting starch into sugar. The bearing of this fact on the practice of giving starchy food to very young infants is obvious.

Aneurism of the Aorta cured by Galvano-acupuncture. (*Nuov. Ligur. Med.*, October 10th.)—Ciniselli, of Cremona, reports in *Annali Univ. di Med.* a case of lateral aneurism of the ascending aorta, in a man forty-six years old, cured by means of galvano-acupuncture.

Ranula cured by Galvano-acupuncture. (*Nuov. Ligur. Med.*, October 20th.)—Dr. Giovanni Gasparini reports several cases of ranula cured in this way. Two needles are just as effective as more; and the electric current need not and ought not to be a strong one.

Miscellany.

Alumni Association of Bellevue Hospital Medical College.—At the annual meeting of this Association, held at the Mott Memorial Library, No. 64 Madison Avenue, February 26, 1873, the following officers were elected for 1873–'74:

President, William T. Lusk, M. D., New York; First Vice-President, Thomas R. Pooley, M. D., New York; Second Vice-President, Frank H. Bosworth, M. D., New York; Recording Secretary, George W. Wells, M. D., New York; Corresponding Secretary, Bradford S. Thompson, M. D., New York; Treasurer, Henry Raphael, M. D., New York; College Historian, Frederick A. Castle, M. D., New York.

The twenty Councillors appointed by the President are: Leroy M. Yale, M. D., New York; Robert Newman, M. D., New York; Charles A. Leale, M. D., New York; William O. Sweeney, M. D., Lexington, Ky.; William H. Katzenbach, M. D., New York; Alfred N. Beach, M. D., New York; J. Wallace MacWhinnie, M. D., New York; Washington F. Peck, M. D., Davenport, Iowa; William F. Fluhrer, M. D., New York; George G. Needham, M. D., New York; William G. Harrison, Jr., M. D., Baltimore, Md.; Edwin D. Morgan, Jr., M. D., New York; Peter R. Cortelyou, M. D., Brooklyn, New York; John J. Mason, M. D., New York; José de la Cruz de Varona, M. D., New York; W. Gill Wylie, M. D., New York; David C. Carr, M. D., New York; John W. Pinkham, M. D., Montclair, New Jersey; Thomas H. Burchard, M. D., New York; Richard M. Wyckoff, M. D., Brooklyn, New York.

The business of the Association is referred to the Seven Officers and Twenty Councillors—both together constituting the *Council.*

Every graduate of the Bellevue Hospital Medical College, in good and regular standing, is considered a member of the Association.

The annual meeting of the Association is held on the day before the commencement of the college.

The first annual dinner of the Association occurs in October, 1873.

American Medical Association.—The Twenty-fourth Annual Session of this Association will be held in St. Louis, Mo., May 6, 1873. Physicians desiring to present papers before the Association should observe the following rule:

"Papers appropriate to the several sections, in order to secure consideration and action, must be sent to the Secretary of the appropriate section at least one month before the meeting which is to act upon them. It shall be the duty of the Secretary to whom such papers are sent, to examine them with care, and, with the advice of the chairman of his section, to determine the time and order of their presentation, and give due notice of the same. . . ."

The following are the officers of sections:

Chemistry and Materia Medica: Drs. R. E. Rogers, Philadelphia, Pa., Chairman; Ephraim Cutter, Boston, Mass., Secretary.

Practice of Medicine and Obstetrics: Drs. D. A. O'Donnell, Baltimore, Md., Chairman; Benjamin F. Dawson, New York, N. Y., Secretary.

Surgery and Anatomy: Drs. Edward Warren, Baltimore, Md., Chairman; W. F. Peck, Davenport, Iowa, Secretary.

Meteorology and Epidemics: Drs. George Sutton, Aurora, Ind., Chairman; Elisha Harris, New York, N. Y., Secretary.

Medical Jurisprudence, Hygiene, and Physiology: Drs. S. C. Busey, Washington, D. C., Chairman; A. B. Arnold, Baltimore, Md., Secretary.

Psychology: Drs. Isaac Ray, Philadelphia, Pa., Chairman; John Curwen, Harrisburg, Pa., Secretary.

Secretaries of all medical organizations are requested to forward lists of their delegates, as soon as elected, to W. B. Atkinson, Philadelphia, Permanent Secretary.

Alumni Association of the College of Physicians and Surgeons.—The annual meeting of this Association was held at Delmonico's, February 26th. The following officers were elected for the ensuing year:

President, C. R. Agnew; Vice-President, Robert A. Barry; Secretary, Frederick A. Burrall; Assistant Secretary, George Bayles; Treasurer, T. M. Cheeseman; Committee on Prize Essays, G. A. Peters, Gouverneur M. Smith, Ellsworth Elliott.

A long list of Chancellors was also chosen, headed by Dr. Gurdon Buck, of New York. The annual prize of $250 for the best essay was awarded by the committee to Dr. Andrew H. Smith. It was on the subject of the effects of high atmospheric pressure, including the "Caisson Disease."

After the usual business had been disposed of, the company sat down to dinner. Among those who participated in the festivities of the evening were Dr. Calvin Ellis, Dean of Harvard Medical College; Rev. Dr. William Adams, Dr. Fordyce Barker, Rev. Dr. Howard Crosby, Dr. A. C. Post, Dr. Edward Delafield, Dr. L. M. Yale, Dr. Leaming, Prof. T. G. Thomas,

M. D.; Prof. William T. Lusk, M. D., Dr. James B. Hunter, Dr. F. N. Otis, Dr. Hayes, the arctic explorer; Dr. A. E. M. Purdy, Dr. T. M. Markoe, and Dr. S. O. Vanderpoel, Health-Officer.

The first toast proposed was "Our Alma Mater," to which Prof. T. G. Thomas made an eloquent and appropriate response. The second toast, "The Medical Colleges," was responded to by Dr. Calvin Ellis, Rev. Howard Crosby, and Prof. Fordyce Barker. After several other toasts had been offered, letters were read from Dr. Oliver Wendell Holmes, Mr. George William Curtis, and others, who were unable to be present in person.

Stevens Triennial Prize.—The Stevens Triennial Prize for 1873 has been awarded to an Essay on "The Sphygmograph; its Physiological and Pathological Indications," by Edgar Holden, M. D., of Newark, New Jersey.

The questions proposed for the next prize (1876) are as follows:

I. "The History of Epidemic Diseases in the United States, from 1860 to 1870;" statements as to localities, dates, extent of prevalence, and mortality, to be authenticated by appropriate references. The question of *treatment* is not to form a part of the above subject.

II. "The Use of the Spectroscope, in its Application to Scientific and Practical Medicine."

The competing essays on either of the above subjects must be sent in to the President of the College of Physicians and Surgeons, New York, on or before the first day of January, 1876. Each essay must be designated by a device or motto, and must be accompanied by a sealed envelop, bearing the same device or motto, and containing the name and address of the author. The envelop belonging to the successful essay will be opened, and the name of the author announced at the Annual Commencement of the College, in March, 1876.

This prize, which will amount to two hundred dollars, is open for universal competition.

By order of the Prize Committee:

J. C. Dalton, M. D.

The Civiale Prize.—We are pleased to learn that the *Prix Civiale*, of one thousand francs, given every two years for the best essay on any subject connected with the urinary organs, has been awarded to Mr. Thomas B. Curtis, of Boston, who has been pursuing his studies for some years in Paris. The prize is open to the *internes* of hospitals, of whom there are about one hundred and thirty. The subject of Mr. Curtis's essay is the treatment of stricture by dilatation.

A New Obstetrical Journal.—The Messrs. Churchill, of London, announce their intention of publishing a new monthly, the *Obstetrical Journal of Great Britain and Ireland.* It will be conducted by Dr. James H. Aveling, M. D., of Dublin, and Alfred Wiltshire, M. D., of London. The first number is to appear April 1st.

How Spencer Wells operates.—We take from the *Boston Medical and Surgical Journal* the following sketch, by Dr. David W. Cheever, of Mr. Wells's mode of performing ovariotomy, and of the after-treatment he insists upon in every case:

The great mortality which formerly attended this operation has become a thing of the past in the hands of certain operators. Unfortunately for us, however, a large percentage of fatality still discourages the surgeon in this community. This is more especially true of New England, and above all of Boston, than of other parts of America. For, in Philadelphia and New York, Atlee, Sims, Peaslee, and Thomas, have attained many favorable results, while here we can only infer the amount of success of ovariotomists by their reticence from publishing any detailed statistics of their cases.

But it is to England that we must look for the successful revival of this operation; and the wonderful percentage of recoveries attained by Mr. T. Spencer Wells has attracted to him patients from all parts of Europe; while his hospital is attended by physicians from the whole civilized world.

While in London, during the past summer, I enjoyed, through the courtesy of Mr. Wells, unusual facilities for seeing his operations and the after-treatment of his cases. I have, therefore, thought that an abstract of some notes taken on the spot might be of interest to the profession here.

While I was in London, Mr. Wells completed his five hundredth case, and the mortality had steadily declined, until in the fifth hundred, eighty per cent. recovered and only twenty per cent died. A ratio of recovery of *four-fifths* is far above that of most other capital operations, amputation of the thigh being followed by a mortality of about fifty per cent.; strangulated hernia, forty-five per cent.; and some being even larger.

So far as I observed, Mr. Wells's operations had the following peculiarities:

1. In diagnosis, established, in cases of doubt, by tentative tappings, microscopical and chemical examination of cyst, contents, etc.

2. In the least amount of handling of the patient possible; no one touching the abdomen but the operator.

3. Celerity and decision in operating. This was very noticeable; the time consumed, the period of exposure of the abdominal cavity, and the proportionate shock being much less than in other operations I had seen.

4. Personal care in subsequent dressing and nursing. In this the operator was much aided by a corps of nurses, trained under his own eye in his hospital.

The Samaritan Hospital, for women and children, of which Mr. Wells is surgeon, is an ordinary London dwelling-house of brick, five stories high. The stairway is in the centre, and the rooms, front and rear. Each room has an open soft-coal fire, a ventilator over the outer windows, and one opening into the central stairway. The latter has a ventilator at the head of the stairs. The hospital has been in use for twelve years. Sometimes there have been cases of septicæmia, when it was necessary to clear it out and whitewash. After operation, the patient always has a room to herself.

During the year 1871 *fifty-six* operations of ovariotomy were performed here. The first successful operation was performed in 1858. Ovariotomy had been very fatal in the other London hospitals, thus: at St. Bartholomew's, 12 cases, 8 deaths; Middlesex, 8 cases, 7 deaths; King's College, 7 cases, 6 deaths; St. George's, 7 cases, 5 deaths; University College, 5 cases, 4 deaths; Guy's, 44 cases, 21 deaths: total, 83 cases, 51 deaths. At the Samaritan Hospital, 106 operations, 30 deaths. In other words: In five large hospitals, mortality, 76 per cent.; Guy's Hospital, mortality, 47 per cent.; Samaritan Hospital, mortality, 27 per cent.

These results show what can be done in smaller hospitals in comparison with the larger ones.

Case I.—The patient was about forty years old, not excessively large, and in good condition. She was placed on her back on a table, with the head and shoulders a little raised. She was strapped down by a broad webbing over the knees, and wristlets fastened to a strap, which passed under the table. The whole body was covered with a sheet of rubber-cloth, with an oval cut out over the abdomen. The edges of this oval were made to adhere to the abdomen by adhesive plaster.

Bichloride of methylene was the anæsthetic used. About ʒ v were consumed in half an hour. It was given cautiously with an atomizer. Mr. Wells has used no other anæsthetic for four years; he thinks it less likely to be followed by nausea. In about eight minutes the patient was asleep.

The first incision was about four inches long, from below the umbilicus to the pubes. He cut down rapidly to the peritonæum. Bleeding was checked by forceps left on. On opening the peritonæum the uterus presented itself below, and above this was the white cyst. A very large trocar, with clamps and tube attached, was at once plunged into the cyst, and as it collapsed it was seized with a peculiar vulsellum, and drawn up under the hooked clamps. This cyst was of moderate size; another, and larger one, immediately appeared above it. The external wound was now slit up above the umbilicus. The first cyst was seized with strong forceps, and the opening pinched up. The trocar was then plunged into the second cyst, from which a large quantity of fluid escaped. This also was dragged up under the hooked clamps, and by strong traction pulled out of the abdomen. There were no adhesions.

The second cyst was now dragged entirely out, the clamp put on and the pedicle cut, without hæmorrhage. The first cyst was then easily dragged out, clamped, and cut in the same way.

Thus double ovarian disease was removed; both ovaries extirpated, and both broad ligaments clamped. The sides of the wound were held together by an assistant.

Mr. Wells now passed a large, soft sponge into the abdomen, and left it. He then rapidly passed sutures of silk, with two needles, from within outward; taking stitches alternately at either end. The sponge was withdrawn the last thing, and the wound closed with eight sutures. There was very little hæmorrhage, and no fluid escaped into the abdomen.

Not satisfied with the large protruding pedicles and two clamps, he now passed a large needle through the pedicles, and tied them up around it with hemp twine. Finally, he took away the clamps, and cut away the projections of the pedicle. The wound was padded around with bits of sheet lint, and strips of plaster drawn across; higher up, a large wad of fine cotton, and more adhesives. The patient was then immediately removed, dry, to bed.

She was on the table about half an hour, owing to the delay for the final arrangement of the pedicles. She retained a good color, pulse, and warmth; there was no vomiting. The temperature of the room was about 80°; a warm June day, with the windows open. No disinfectants were used. The urine was to be drawn every six hours. A little opium given to relieve pain, if needed. The sutures to be removed the fourth day. The clamp to be left to come away of itself, usually about the seventh day. The wound to be dressed dry; no moist applications. Lint to be changed when soiled.

I last saw this patient on the *sixth* day, doing well; the sutures were out, and the pedicle partially sloughed away. She was eating quail. I afterward learned that she recovered.

Case II.—Patient older, tumor larger, marks of two tappings. Four drachms of bichloride of methylene. Incision of four inches. On opening the peritonæum an ascitic fluid ran out. The hand was passed in between the abdominal parietes and the cyst, and adhesions were broken down. The cyst was tapped; the trocar clamps hooked on, and an attempt made to deliver the cyst, but in vain. The cyst was then slit open with a knife, and the two cut sides seized with forceps and held open. The hand was passed into the cyst, and numerous others broken down and evacuated. The cyst was then dragged out, and an attachment to the omentum torn away. Near the pedicle, the cyst was found to be attached to the side of the uterus, by inflammatory adhesion. The pedicle was clamped and cut. Then the large adhesion was transfixed with a needle, and ligatured and divided. There was a good deal of hæmorrhage. This was checked with silk ligatures. These were cut short off, and returned into the abdomen. The pedicle was finally secured with silk ligatures, and the clamp taken off. The pedicle was dropped back into the abdomen. The omentum was ligatured at several bleeding points, and the thread cut short off. The ragged omentum was trimmed, and the whole returned into the abdomen. The wound was closed by nine silk sutures. *Nothing was left outside.* The abdominal cavity was freely sponged out, and the omentum left out fifteen minutes. The patient had to be stimulated a little. I saw this patient on the *fifth* day, doing perfectly well. The sutures were out, and the wound closed by first intention. On returning to London in September, I learned that she had recovered.

Case III.—Patient was middle-aged, somewhat reduced, abdomen large. From first incision to clamping and cutting pedicle, only eight minutes. The abdomen was open fifteen minutes. The patient was back in bed in thirty minutes. No vomiting; good color; gentle, warm perspiration when put to bed. Anæsthesia not very profound. The cyst was very thin, and was punctured with the knife on opening the peritonæum. No trocar was used. Other cysts within it were punctured, broken down, and emptied. The mother-cyst was a little adherent to the omentum and peritonæum. The cyst was separated from the abdominal walls, by the hand inside of the cyst; Mr. Wells considering this the best way, as there is thus no risk of stripping off the peritonæum. The pedicle was small, and was clamped. I saw this patient on the fourth day, doing well. She recovered.

Case IV.—Mr. Wells stated this to be a doubtful case. An exploratory incision revealed a large, solid, vascular, uterine tumor, and a cyst above it and adherent to it. This cyst, when tapped, gave exit to a bloody fluid, in large quantity, but, when tapped before the operation, it had shown a pure ovarian fluid. The cyst could neither be removed nor brought to the surface to drain, so it was emptied, and the abdomen sewed up. This patient recovered from the operation.

Three of these operations were in private houses. Mr. Wells selects a room at the top of the house, and has a soft-coal open fire. The sponges are cleansed with sulphurous acid, and warmed at the fire. He gives a good diet as soon as the patient wants it. The urine is drawn every six hours. The bowels moved after the seventh day. No one dresses the patient but Mr. Wells. He relies a good deal on the temperature, which is taken frequently. He says it is the little things that tell. He does not believe the operation is followed by any more shock than an amputation. The absence of shock, in the cases I saw, was one of the most remarkable peculiarities.

He says the ligatures, cut short and dropped in, take care of themselves. No carbolized ligatures are used; plain silk, or hemp.

His assistant told me that he made an autopsy a year after the operation, where ligatures were left in, and he could barely find a trace of them.

Academy of Medicine.—April 3d, Prof. Alfred L. Loomis will read a paper on "Acute Uræmia." April 17th, Prof. William T. Lusk will read a paper on "The Etiology and Indications for Treatment of Irregular Uterine Action during Labor."

Obituary.

Dr. Uriah G. Bigelow, an eminent physician of Albany, died February 24th, in the fifty-third year of his age. He graduated at the Albany Medical College, after which he practised for four years in the town of Berne, and then removed to Albany, where, by force of his talents and indomitable energy, he placed himself in the foremost rank of his profession. During his lifetime he was President of the Albany County Medical Society, Curator of the Albany Medical College, and at the time of his death consulting physician of the Albany Hospital.

Dr. Abner Phelps, one of the oldest physicians in Massachusetts, died in Boston, February 24th, aged ninety-five years. He was a member of the State Legislature in 1826, and on the second day of the session offered an order, which is said to have been the first proposition for a railroad ever made before a legislative body in this country.

Prof. John Torrey, M. D., of Columbia College, in this city, died, of pneumonia, February 26th. Prof. Torrey was eighty years of age, and had for many years been widely known and respected among scientific men. He was born in this city, and, after taking his medical degree at the College of Physicians and Surgeons, he devoted his attention exclusively to chemistry and botany. He was one of the earlier members and at one time President of the Lyceum of Natural History, to the "Annals" of which he largely contributed, both in the department of Botany and that of Mineralogy. In 1817 he published a catalogue of the plants growing within thirty miles of New York; in 1824 he published the first volume of the "Flora of the Northern United States," and in 1826 a "Compendium" of the latter work.

He prepared the botanical part of the reports of the natural history survey of this State, and, with Dr. Gray, described, in successive government volumes on the exploring expeditions, a large number of the plants, shrubs, and trees collected. He was actively engaged, during his whole life, in chemical and mineralogical investigations, and held responsible collegiate offices.

In 1824 he was appointed Professor of Chemistry in the West Point Military Academy, but resigned in 1827, to accept the professorship of Chemistry and Botany in the College of Physicians and Surgeons in this city, which he held until 1854; and, on his resignation, he was appointed Professor Emeritus.

He held the chair of Chemistry at Nassau Hall, Princeton, N. J., from 1828 to 1851. When the United States Assay-Office was established in 1853, in this city, he was appointed its assayer.

He was a trustee and professor in Columbia College, and took a very active part in extending the curriculum, and organizing a post-graduate course of lectures.

DR. HUGH LENNOX HODGE, Emeritus Professor of Obstetrics in the University of Pennsylvania, died in Philadelphia, March 1st, after a very brief illness.

WE announce with much regret the untimely death of Dr. Alfred E. Walker, which took place in New Haven, March 5th. Dr. Walker had for some time past contributed to the pages of this JOURNAL, and the excellence of his work is the best praise of his ability and judgment. He was possessed of rare talents and extraordinary industry, and gave promise of a brilliant future. After receiving his diploma from the Medical School of Yale, Dr. Walker was for some time Resident Physician to the Insane Retreat at Worcester, Mass. He subsequently went to Washington Territory, and afterward established himself in practice in Chicago. For domestic reasons he was obliged to return to the East, and since his return his health had failed him, and he had suffered much from mental depression.

DR. MARCHAL DE CALVI, a well-known French army-surgeon, and the originator of the *Tribune Médicale*, died, recently, in Paris, of apoplexy, while correcting the proof-sheets of his journal.

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ART. I.—*Galen and Paracelsus.*[1] By J. C. DALTON, M. D., Professor of Physiology in the College of Physicians and Surgeons.

MR. PRESIDENT AND GENTLEMEN: As the agreeable duty has been assigned to me of offering to the Academy a paper this evening, I will venture to ask your attention, in the interval of more important business, to a brief sketch of two historical personages who may be considered as representing, each in his different way, two of the most remarkable phases of medical character.

These two persons are Galen and Paracelsus.

Galen was born early in the second century of the Christian era, at the city of Pergamus, near the western coast of Asia Minor, opposite the Ægean Archipelago. He was Greek by descent as well as by birth, the son of Nikon, an architect, who was a man of good fortune, and accomplished in his profession. Galen himself received a liberal education in the various branches of knowledge cultivated at the time. He studied medicine under several masters, and afterward resorted to Alexandria in Egypt, then the great centre of medical science, where he devoted himself more especially to anatomy. After completing his studies, he at first practised for a few years with credit in his native city of Pergamus; but afterward took up his residence in Rome, where the greater part of his professional life was spent, and where he took the most prominent rank among the physicians of the time. He was therefore for many years the most celebrated physician in the first city of the world. He was the representative man in the medical profession of his day, and he left an impress upon medical science and art which lasted for more than a thousand years.

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[1] Read before the New York Academy of Medicine, March 20, 1873.

It is not always easy to appreciate fully the intellectual calibre of men who lived in what we call the time of the ancients. We are separated from the ancient civilization and culture, by the dismal interval of the middle ages; and some of the links which would connect us with them are, no doubt, irrecoverably lost. Besides, as we have now accumulated so much more actual knowledge than they possessed, we are sometimes apt to think of the ancients as children in science, and out of the range, in this respect, of a comparison with ourselves. We should not commit such a mistake, if we remembered that the intellectual capacity of a people is not to be measured by what they know, but by what they have discovered; not by the knowledge which they have received from their predecessors, but by that which they have created and handed down to their posterity.

Judged by this standard, the physicians of the ancient time were at least fully the equals of the moderns; and it would be difficult to find, in any period of the world, a man more remarkable than Galen for all the essential qualities of professional and scientific preëminence.

One of his most striking traits was the respect which he entertained for his predecessors in medical discovery. Hippocrates was his admiration and his model, and he followed his precepts and ideas more closely than those of any previous teacher. But this was not a servile and barren admiration. He believed that the highest tribute he could pay to such a master would be in carrying out and developing his method, so as to increase the knowledge already attained.

"There are many physicians," he says, "like the athletes, who would like to win prizes in the Olympic games, and yet will not take the pains necessary to gain them. For they are loud in their praises of Hippocrates, and place him in the highest rank among physicians; yet never think of imitating him themselves. . . . It is certainly no small advantage on our side to live at the present day, and to have received from our ancestors the arts already brought to such a degree of perfection; and it would seem an easy thing for us, after learning in a short time every thing that Hippocrates discovered by many years of labor, to employ the rest of our lives in investigating what still remains unknown."[1]

Galen was devotedly fond of anatomy, and insisted upon it, in opposition to some of the medical sects of the time, as an indispensable basis for rational medicine. He constantly expresses his admiration for the manner in which all parts of the body are adapted to their functions; and even the study of the articulations, and the form of the bones and their attachments, have an unceasing attraction for him. "In my view," he says, "there is nothing in the body useless or inactive; but all parts are arranged to perform their offices together, and have been endowed by the Creator with specific powers."[2]

His ideas in physiology were thoroughly scientific, and entitled to the highest consideration in the history of the subject. Of course it was impossible for him to master the physiological details to be learned from chemistry, which was then unknown, nor by the microscope, which had not been invented. But in every part of the subject which was accessible by the means at his disposal, his views will bear the closest criticism; and, in every thing connected with his own personal acquirements, his superiority is beyond question.

He was an enterprising and judicious investigator, and an industrious and successful teacher. He was the first great experimental physiologist—as no one, before his time, so far as we can learn, habitually resorted to experiments upon animals, as a means of discovery in physiology. Galen not only did this, but also frequently illustrated his points by public demonstrations. The result of this was a large accumulation of physiological facts, many of them of the highest value; and it is a most curious thing to see how, in the subsequent periods of European history for many hundred years, not only was there no one to rival or even to continue his discoveries, but the profession was not able even to retain them; so that some of the most important, though expressly contained in his writings, were practically forgotten, and had to be discovered over again, centuries afterward.

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[1] "Galen, Quod optimus Medicus et quoque Philosophus."

[2] "De Usu Partium," iv., 2.

Perhaps the single discovery for which he is better known than for any other is that of the true function of the arteries as vessels containing blood. In Galen's time and for several centuries before,[1] it was the prevalent opinion that in respiration a vital air or gas penetrated into the pulmonary veins from the lungs, was carried to the left ventricle of the heart, and thence distributed all over the body by the arteries. This vital air or "spirits," derived from the atmosphere, was what called into play the organic forces of the system, and thus maintained the life of the animal frame.

But Galen did not believe that the air penetrated as a mass into the heart and arteries. He considered that it was rather a quality than the substance of the air, which entered the blood in the lungs, and thus communicated to it an element of vitality; so that what circulated in the arteries, according to him, was not air or "spirits," as formerly believed, but arterial blood, vivified and animated by the qualities which it had absorbed from the air in the lungs.

He based this opinion on the positive phenomenon that, although when the arteries are opened in the dead body they appear empty, yet, if opened during life, it is blood that escapes from them and not air. This was so palpable a fact, that the older observers could not help knowing it; but they explained it by saying, that when an artery is opened during life, it first empties itself of the air which it contained, and then blood passes into it by transfusion from distant parts. Galen declared that this explanation was untenable. "For if you prick an artery," he says, "even with the finest needle, blood escapes from it at the very first. Now, it seems to me that, though the air supposed to be contained in the arteries might escape instantly from a large wound, yet that it would require considerable time to be expelled from one of moderate size, and therefore could not help becoming perceptible to the senses. It is said that blood is not discharged from the vessel until all the air has escaped, and that the transfusion of blood begins from the remoter vessels. But this involves two improbabilities: first, that all the air in the arterial system should be so quickly discharged through a mere needle-puncture as to escape detection; and, secondly, that the animal should continue to live after losing all the vital air in his arteries."[1]

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[1] Since the time of Praxagoras of Cos (B. C. 250), who first made the distinction by name between arteries and veins.

But though Galen went through with all these arguments in discussing the question, his own convictions evidently rested upon the results of direct experiment. He exposed a large artery in the living animal. Now, if the vessel, on being opened, gave exit to blood, this blood must either have been contained in it beforehand, or must have passed into it from elsewhere. To test this point, he first included a portion of the vessel between two ligatures, and so shut off all communication with other parts. Then by opening it between the ligatures he showed that in reality it contained blood and not air. From that time the existence of arterial and venous blood, in two sets of blood-vessels, the veins and the arteries, was a permanently-established fact.

There are other points in regard to the circulation which he treated in an equally successful manner, such as the action of the pulmonary and aortic valves, and the movements of the heart in pulsation. One of his most remarkable observations relates to a terminal communication between the arteries and veins. He even uses, for this communication, the same word, "anastomosis," which we now employ.

"The arteries and the veins," he says, "anastomose with each other throughout the whole body, and exchange with each other blood and spirits by certain invisible and exceedingly minute passages."[2]

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[1] Galen, "An Sanguis in Arteriis Natura contineatur."

[2] "De Usu Partium," vii., 10.

When we remember that even in Harvey's time this capillary connection between the arteries and the veins had not been made visible by the microscope; and that its absence was even thought a serious objection to his doctrine of the circulation, it seems a singular fact that it should have been taught by Galen fifteen hundred years before.

His description of the movements of the heart is hardly, if at all, inferior to that given by Harvey, and shows how much he relied upon direct observation.

"We can also," he says, "see the arrangement and action of the fibres of the heart under two conditions, either by examining the organ when just taken out of the animal and still pulsating, or by removing the sternum in the manner which I have described in the 'Treatise on Dissections.' For when, the longitudinal fibres being in contraction, and all the others relaxed, the length of the heart is diminished, while its breadth is everywhere increased, at that time you will see that the organ as a whole is dilated; on the other hand, when the longitudinal fibres are relaxed, and the transverse contracted, you will then see the heart again drawn together, while between these two motions there is a short interval of quiet, during which the organ is everywhere exactly constricted about its contents, all the fibres acting together and especially the oblique. The contraction of the heart is also in great measure aided by the strong bands in the interior of the ventricles (*the columnæ carneæ*), which in contracting draw its walls inward. For between the two ventricles there is a sort of septum, to which these bands are attached, forming in this way a connection between it and the external walls. When these walls, therefore, approach the septum, the heart is extended in the direction of its length, but contracted in the direction of its breadth. When the sides of the organ, on the contrary, recede from the septum, its lateral width is increased and its length diminished."[1]

But the most curious point of all, in the history of the circulation, is connected with the fœtal condition of the heart and pulmonary vessels. Late in the sixteenth century, Leonardo Botali, who was a physician of considerable eminence in

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[1] "De Usu Partium," vi., 8.

Paris, happened to examine a heart, in which the foramen ovale, in the septum of the auricles, had remained open. He published this as a most remarkable discovery, a vascular canal which nobody had seen before, by which the blood naturally passed from the right auricle to the left. Afterward it was found that this was simply a blunder; for the foramen only exists exceptionally in the adult, and is really characteristic of the fœtal condition, becoming closed within a short time after birth. But it still retains the name of its mistaken discoverer, and is often called, to this day, the "foramen of Botal."

Now, Galen knew all about the foramen ovale, and the ductus arteriosus also. He described them both, as physiologically associated with each other, and as peculiarities belonging to the fœtal condition. And he gives as a reason why the functions of the pulmonary artery and vein are interchanged at this time, that before birth the lungs merely require ordinary blood for their nourishment and growth, and it is only after birth that they enter on their functional activity. This passage is so important that I must ask the privilege of quoting once more:

"Here," he says, "we again have reason to admire the provisions of Nature. For so long as the lungs require only to be nourished and grow, they are supplied simply with blood; but when the time comes that they are to assume an active motion, their substance becomes lighter and adapted for dilatation and compression with the movements of the chest. For this reason there is a direct communication, in the fœtus, between the vena cava and the commencement of the pulmonary vein (*arteria venosa*). But since this latter vessel performs for the lung at this time the office of a vein, the necessity of the case requires that its companion (the *vena arteriosa*) should assume the function of an artery, while the pulmonary artery (*vena arteriosa*) also communicates with the aorta. As these last two vessels, however, are situated at some distance apart, they are connected by means of a third narrow canal (the *ductus arteriosus*) running from one to the other. In the case of the vena cava and left auricle (*arteria venosa*) on the other hand, which are situated in immediate contact with each other, the communication is made by an opening or foramen common to both; and at this point there is placed a membranous valve opening toward the left auricle (*ad pulmonis vas*), so that it readily yields to the impulse of the blood flowing from the vena cava, but will prevent its regurgitating in the opposite direction."[1]

He immediately goes on to describe, in the most graphic manner, the closure of the foramen ovale after birth, and the manner in which its valve becomes agglutinated to the walls of the auricle.

There is no doubt that Galen and others of his time knew and practised the ligature of arteries for the arrest of hæmorrhage, a method afterward lost, and again invented by Paré in the sixteenth century. He describes the ligature of arteries as a regular operation,[2] and expressly mentions its being done by a surgeon of Rome in a case where the brachial artery was divided, and where he speaks of it, in a passing way, as if it were the recognized mode of stopping the flow of blood in such cases.[3] He even says that where an artery of moderate size, like one of the intercostals, is opened during an operation, the hæmorrhage may be stopped by cutting the vessel completely across, as its divided ends then retract and their orifices are closed.

But Galen's favorite field of investigation was the nervous system; and his acquirements in this department alone are sufficient to place him in the foremost rank of experimental physiologists. He knew that the brain is the central organ of the nervous system, that the spinal cord is an offshoot from it, and that the nerves are the organs of communication for the nervous influence, the action of the muscles being regulated by them "as chariot-horses are managed by the reins." "The muscle," as he expresses it, "is the *instrument* of voluntary motion; and we have seen whence the principle of this motion originates and by what path it travels. It comes *from* the brain, and *through* the nerves."

The spinal cord, according to him, derives its powers from the brain; "for, if the cord be divided in any part, the region of the body above the point of section remains uninjured, while that below loses altogether the powers of motion and sensation."[1] These doctrines, at the same time, were not theoretical with him, but were all based on the direct results of investigation.

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[1] "De Usu Partium," xv., 6.

[2] "De Methodo Medendi," v., 3.

[3] "De Administrationibus Anatomicis," iii., 9.

He followed out in detail the effects produced upon respiration by dividing the spinal cord at various points in the neck and back—as affecting, together or separately, the intercostal and phrenic nerves; and he indicated fully the distinction between abdominal and thoracic respiration.

"If the cord," he says, "be divided between the third and fourth cervical vertebræ, the animal at once stops breathing and becomes completely paralyzed, not only in the chest, but in the whole body below the point of section; if between the sixth and seventh, the thoracic muscles are paralyzed, and the animal breathes by the diaphragm alone; and, the farther down among the lower vertebræ you make the section, the greater the number of thoracic muscles you will leave uninjured."[2]

Finally, he knew that division of the cord at its point of origin was instantly fatal; and, like modern experimenters since the time of Flourens, he was accustomed to kill his animals, when he desired to do so for certain purposes, either by suffocation, by strangling, by opening the larger blood-vessels, or by section of the medulla at the level of the first cervical vertebra.[3]

His researches on the spinal cord were all characterized by great fulness and accuracy. Besides the experiments already mentioned, he was accustomed to make a division of one lateral half of the organ, the other half remaining untouched. He says that "transverse sections of the cord up to the median line do not paralyze all the parts below, but only those on the corresponding side—the right side of the body when the right half of the cord is divided, and the left side after division of the left half."[4]

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[1] "De Hippocratis et Platonis placitis," vii., 8.

[2] "De Administrationibus Anatomicis," viii., 9.

[3] "De Administrationibus Anatomicis," viii., 10.

[4] "De Locis affectis," iii., 14.

But the most delicate of his experiments on the spinal cord is that of its longitudinal section in the median line, which he describes, with its results, in express terms: "If the spinal cord," he says, "be divided lengthwise from above downward by a straight section through the median line, none of the nerves going to the intercostal muscles are paralyzed, either on one side or the other, nor any of those going to the loins or the lower limbs." [1]

He showed in this way that there is no crossing of the motor influence in the cord from side to side, but that each lateral half, in this respect, is independent of the other. It is only within the recollection of all of us that our distinguished friend Dr. Brown-Séquard has shown that a longitudinal section of the cord in the median line, while it does not interfere with motion, does in reality destroy sensibility. Galen was evidently almost on the point of the same discovery; but his attention was confined, in this particular instance, to the paralysis of motion, so that he did not observe the effect produced upon sensibility; and it was only after the lapse of seventeen centuries that the experiment was completed, and the crossing of the sensitive fibres shown, by means, in great part, of this same longitudinal section.

But Galen was fully aware of the different and independent affections of motion and sensation, as well as of the paralysis of different parts. He makes the distinction of paralysis of the lower half of the body alone, or what we call paraplegia—paralysis of one lateral half, or hemiplegia—hemiplegia with or without facial paralysis—paralysis of motion alone, that of sensation alone, and that of both motion and sensation together.[2]

He was very clear as to the distinction between motor and sensitive nerves, and pointed out many, if not all, of the cases in which this distinction exists. He showed that the third pair of cranial nerves were the motor nerves of the muscles of the eyeball, while the optic was its special sensitive nerve of sight; that the tongue has a sensitive nerve of touch and taste, derived from the trigeminal, and distributed to its mucous membrane, while its motor nerve is the hypoglossal, distributed to its muscles; and that the trigeminal is the general sensitive nerve of the face, while it also gives motor branches to the temporal and masseter muscles. His only mistake about this nerve was, that he considered it as also supplying motor branches to the nostrils and lips; but that is no more than Sir Charles Bell still did in 1821.

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[1] "De Administrationibus Anatomicis," viii., 6.

[2] "De Locis affectis," iii., 4.

Galen regarded the two properties of sensibility and motion as differing in kind, and not merely in degree. On one occasion he was consulted in a case where a man had for some time lost the power of sensation in one of his hands, though he retained the power of motion. A discussion arose how it could be possible for one of these nervous faculties to be abolished without the other; and the reason given was that the power of sensation was a passive one, and so comparatively feeble, while that of motion was active and therefore stronger; and that, accordingly, an injury of a certain kind might abolish the weaker of these powers, or sensation, and leave the stronger, or that of motion, untouched. But Galen asked his colleagues how, in that case, they could explain instances in which the power of sensation remained, while that of motion was abolished;[1] it then being the stronger faculty which was affected, and the weaker left untouched. He maintained, on the contrary, that the two powers were exercised by different nerves, either of which might be paralyzed separately from the other.

Galen's idea of the distinction between motor and sensitive nerves, based on observation and experiment, was closely connected with their anatomical distribution. A motor nerve, according to him, was distributed to the muscles; a sensitive nerve was distributed to the skin. "If, therefore," he says, "the nerves distributed to the muscles be affected, motion disappears; if those going to the skin, sensation."[2] A long time afterward, physiologists generally adopted the opinion that this distinction included a radical difference in the nature of the nervous action—that there were two kinds of nervous filaments, namely, *sensitive* filaments, which were capable of communicating sensation alone, and *motor* filaments, capable only of exciting motion—and that these two kinds of filaments were present in varying proportions in different nerves. It is singular that within a short time, from the experiments of Vulpian and Paul Bert, we have reason to believe that there is really no difference in the internal action of these filaments, but only in the result produced by the organ with which they are connected; and that, as Galen thought, a sensitive nerve is simply one distributed to the integument, and a motor nerve one distributed to the muscles.

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[1] "De Locis affectis," i., 5.

[2] Ibid.

His experiments on the pneumogastric and recurrent laryngeal nerves, and his discovery that division of the latter produces a loss of voice, are too well known to require repetition.

His love for demonstrative proof and scientific precision was accompanied by a liberal and active imagination, which is frequently shown in his writings. We seldom meet with a finer observation than this, in which he compares the glottis to a musical instrument.

"In the inner cavity of the larynx there is a structure of peculiar formation, which we have already shown to be the principal organ of the voice. It resembles the tongue or mouth-piece of a reed-pipe, especially when seen either from above or from below. . . . Instead, however, of comparing this organ (the glottis) with the tongue of reed instruments, it would be more appropriate to compare them with the glottis. For the works of Nature are both earlier in time, and more perfect in construction, than those of art; and, as the glottis is the work of Nature, while the reed-pipe is a production of art, it is possible that the latter might have been made in imitation of the glottis by some clever artist, able to understand and copy the structure of natural objects."[1]

On the whole, however, his most prominent quality was his constant employment of demonstration, and his exclusive reliance upon rational and intelligible evidence. He ridicules one of the medical sects of his day for their passion for dialectics, by which their writings, he says, were "filled with riddles, as hard to comprehend as those of the Sphinx." On the other hand, he praised Hippocrates for the opposite qualities, because he "did not think proper to describe the causes of disease in accordance with an assumed idea—believing positive phenomena to be always more worthy of credit than any imaginary conception."[1]

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[1] "De Usu Partium," vii., 13.

In his discussions and controversies he occasionally showed a strong vein of humor. Some of the critics had objected to his doctrine of the offices of the arteries and veins as connected with respiration, that it must be incorrect, because the same two sets of vessels existed before birth, at a time when respiration is not yet established.

"Here," he says; "they think they have shown that there is no such natural provision as I have described, and that all I have said on this subject is without foundation. In reply, I will simply charge them with a neglect of anatomy, for it is only through ignorance of anatomical facts that they could ever have been led to make such an assertion. They are precisely in the position of the man who, in counting his donkeys, forgot to reckon the one he was mounted on, and accused his neighbors of stealing it; or like a man whom I recently saw myself, much to my amusement, making a great tumult and turning the house upside down, to find some money which he held all the while in one hand, in a piece of paper. Now, suppose that while these men were busy with their impotent vociferations, some by-stander had quietly pointed out to one of them the donkey he was sitting on, or had asked the other to touch his right hand with his left. In the same way I reply to my critics by simply showing them in the fœtus the ductus arteriosus and the foramen ovale."[2]

Archigenes, who lived a few years before Galen, belonged to the medical sect of the "eclecticists," and wrote a book of considerable celebrity on the pulse. His style was involved and obscure, and he had the foible of multiplying the subtleties of classification and definition, and of using words in an unusual and peculiar sense. He assigned to the pulse eight different qualities or modifications, which he designated by the word *διηχημεναι*—a term of his own invention. These eight qualities of the pulse were its size, force, velocity, frequency, fulness, regularity, uniformity, and rhythm; and they were each subdivided into other varieties, of the two extremes and the natural mean, the long, the large, and the high pulse, and so on, to an excessive degree.

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[1] Sprengel, "History of Medicine," Jourdan's translation, vol. i., pp. 311, 312.

[2] "De Usu Partium," vi., 20.

Galen objected to all this, that there was too much fancy in it, and too little reality.

"This is a mistake," he says, "that Archigenes makes at the outset, in enumerating the qualities of the pulse. For he does not attempt to offer any proof of their being eight in number, but only makes the assertion, point-blank, as follows: 'There are said to be eight qualities belonging to the pulse, called by the purists *διηχημενὰι*.' As for me, however, I cannot even guess the meaning of this word '*διηχημεναι*,' neither do I know of such a term used by any of the Greek writers. Consequently, I have no idea what Archigenes means by it; especially as he has not written a book to explain his own idiom, as Chrysippus did about the new words in his 'Dialectics.' That would really have been the only way to help us understand him. To be sure, you might suppose, without the context, that he used the word in its ordinary and vulgar sense; but he takes good care to prevent this. For he says that the qualities of the pulse are so called, not by everybody, but only by the 'purists;' and we do not even know who these purists are. . . . Certainly it would have been much better if Archigenes had added to his statement, if not a positive demonstration, at least some plausible reason for it; so that the reader might not find himself, at the very outset, hearing the law laid down, without any evidence to support it."[1]

Above all, Galen was unalterably opposed to quackery in all its forms, whether intentional or mistaken. He would have nothing to do with arcana, or occult remedies, that is, medicines that act in some secret and unintelligible way, and are supposed to cure a disease because they are good for it. The only genuine specific known to medicine, was not yet discovered in his time, and for the pretended ones he entertained a thorough aversion. His remedies were directed against the visible symptoms as they arose, or to counteract the morbid condition of the system, which was thought to have produced them. Since his time, the science of chemistry has, of course, added immensely to our knowledge of the constituents of the animal body; and his system of pathology and therapeutics, based upon the four elements, is no longer of any use to us. But his method of investigation was judicious and fruitful, and many, if not all, of his discoveries have retained their full value to the present day; and for his enterprise and indefatigable industry, his clearness of perception, and his genuine and scientific acquirements, he has never had a superior in ancient or modern times.

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[1] "De Pulsuum Differentiis," ii., 4.

Paracelsus was born in the year 1493, in the lowlands of Switzerland, at the village of Einsiedeln, near Zürich. There is, however, a singular doubt, even about his name, birthplace, and family. One of the writers says that his real name was Höchener, and that he was of a low origin, and was born in the canton of Appenzell, near Lake Constance. He himself claimed that his family name was Von Hohenheim. It is given on the title-page of several of his works as Theophrastus Paracelsus, and he sometimes alludes to himself under the same designation. Erasmus addresses him in a letter as Theophrastus Eremites; but the entire list of his names and surnames, as given by himself, is Philippus Aureolus Theophrastus Paracelsus Bombastes von Hohenheim.

It does not appear that he had any liberal education, or that he went through any such complete course of medical studies as would entitle him to a medical degree. He travelled, however, over different parts of Europe, visiting various universities, devoting himself in great measure to the study of alchemy and astrology, and practising the medical art wherever he happened to be. This period of his life has little or no well-authenticated history, except that, in some way or other, he acquired great celebrity as a practitioner in different parts of Germany. His reputation, however, was already of that sort that the profession at present always regard with considerable suspicion; that is, he was noted as having performed a number of remarkable cures upon well-known and titled personages. He claimed to have cured no less than eighteen princes, of royal or ducal blood, who had previously found no benefit from the treatment of their regular physicians.

The result of this was that in 1526, at the age of thirty-three years, he was made Professor of Medicine and Surgery in the University of Bâsle, where he at once began a course of most extraordinary lectures and publications. He taught a set of doctrines of his own, in which he denounced, in unmeasured terms, the accepted principles of medicine, as derived from the ancients, and claimed a supremacy above all other writers and teachers, whether previous or contemporary. His dictatorial manner, and his extravagant and insane boasting, were without limits; and he had a certain kind of eloquence which, during the height of his popularity, attracted the wonder and applause of his audience. One of the specimens of it is as follows:

He says that Philosophy, Astrology, Alchemy, and Virtue, are the four pillars of Medicine.

"And for the same reason," he continues, "that I call these the four pillars of Medicine, they are to be admitted as such by you. You are to be my followers, and not I yours. Me, me, I say, you will follow; you, Avicenna, Galen, Rhazes, Montagnana, and Mesues, I shall not be your follower, but you shall be mine; you, men of Paris, and Montpellier, and Cologne, and Vienna; you Germans, men of the Danube and the Rhine, and the maritime islands, Athenians, Greeks, Arabs, and Israelites, I am not to follow you, but you shall follow me; nor will any one hide even in the farthest corner, where the dogs shall not piss on him" (*quen canes non permingent*). "I am to be the monarch, and the monarchy will belong to me. . . . For I tell you boldly that the hair from the back of my head knows more than all your writers put together; my shoe-buckles have more wisdom in them than either Galen or Avicenna; and my beard more experience than your whole Academy. . . . Do not boast yourselves and say, 'We have Galen for our father, or Avicenna.' As for them, the stones shall fall upon them, and the sky shall produce other physicians, who will understand the four elements, and magic, and the cabalistic art, that for you are only cataracts and a beam in the eye."[1]

At the same time he had no learning, and knew little or nothing of the medical sciences, even as they existed at the time. He miscalled medical terms, and misquoted Latin verses. He even gloried in his ignorance, and considered it as an evidence of originality.

"My own writings," he says, "are enough to prove this; for in this book I shall bring forward no less than six hundred new inventions, and not one of them is admitted by any philosopher or physician, ancient or modern, nor can be, unless he is willing to abandon the writings of the ancients altogether. There are plenty who know that my whole library is so small that I could hardly make out of it a dozen written pages; and, beside, my secretaries will testify under oath that they have written every thing from my own dictation. The fact is, that in the last ten years I have not read a single book. . . . Hence that notorious and widely-known dexterity in curing the sick, which I have employed to such wonderful advantage, both in the kingdom and the provinces, beyond all other physicians, with their teachers and their books; performing, as I have, cures that they could not imitate, with all their books, if they were to try forever."[2]

He pretended to have a remarkable power of perception and diagnostic skill. According to him, a man's body "ought to be, to the physician, as transparent as a distilled dew-drop, where not the slightest particle can escape the sight. The eye of the physician ought to penetrate through a man's body as it would through a limpid and sparkling fountain, where he can distinguish every pebble and grain of sand with its natural shape and color. . . . All the members of the body ought to be as transparent to him as a polished crystal, where not even a hair could be concealed without his knowing it."[3]

His practice was of the heroic character. He discarded most of the milder and simpler remedies previously in vogue, and treated his patients with a variety of arcana, or specifics, extracted by alchemy from different mineral and organic bodies. Opium, a drug which no school of practitioners seems able to dispense with, was one of the few older remedies which he retained in his pharmacopœia. His specifics and essences, of various grades, were some of them inert, but others very powerful; and he seems to have used them all indiscriminately, without much caution or intelligence. The well-known story about the antimony and the monks, which is sometimes attributed to him, is probably an instance of this. He still continued to perform extraordinary cures; but, as sometimes happens in such cases nowadays, soon after the wonderful cure had been published to the world, the disease took an unfavorable turn, and the patient died.

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[1] "Prefatio in Librum Paragranum."

[2] "Fragmenta varia, Theophrastus ad Lectorem."

[3] "Liber Paragranum, I."

This happened in the case of Froben or Frobenius, an eminent printer of Bâsle, whom he cured of an attack of gout, probably about the time when he first came to the university. His success in this case gained him great credit. But the next year, in 1527, the patient had another attack; and either that or a repetition of the treatment proved fatal. Frobenius was a great friend of Erasmus, the theologian; and, between the first and second of his attacks, Erasmus also became a patient of Paracelsus. There was a correspondence between them, and the two letters are rather curious, as illustrating the peculiarities of both personages.

The first is from Paracelsus.

Theophrastus Paracelsus to his good friend, the most learned Chief of Theologians, Erasmus Roterodamus:

What the learned Muse and Alstoos (probably referring to Frobenius and some other person) have attributed to me in medicine really belongs to me. I am certainly the author of these opinions. The region of the liver (in your case) does not need any medicines, nor do your two other complaints require laxatives. The medicine for you is Magistrale, an arcanum, extracted from a strengthening, specific, and abstersive, that is to say consolidative, syrup. For the troubles of the liver it is a Second Essence, and in gravel of the kidneys it is esteemed a royal medicine. I know that your system cannot bear colocynth, nor any disturbance, or at any rate very little, from (purgative) drugs. I know that I am more clever and skilful in my art than that; and I know what, in your system, will secure a long, quiet, and healthy life, and that you do not need evacuations. Your third disease (to speak plainly) depends upon a matter of some kind, either an ulcerated putrefaction, or phlegm, perhaps produced on the spot, or accidentally collected, or else the excrement of the urine, or the tartar of a vessel, or mucilage from other parts of the sperm, or a viscous or bituminous state of the blood. It is a liquid gravel, coagulated by the potency of salt (in which the coagulating power resides), as it is in flints or beryl. This is the way it is generated, and I have seen it in your case. But whatever I have decided on, I have made up my mind that there are calcareous mineral grains in the kidneys, under the form of coagulated matter.

If my specific practice, O excellent Erasmus! should please your excellency, I will take care that you have both a physician and physic. Adieu.

THEOPHRASTUS.

This reminds one of the Ojibway medicine-man in Longfellow's "Hiawatha:"

"Then a magic drink they gave him,
Chanted singly and in chorus,
Mystic songs like these they chanted,
Beat their drums and shook their rattles:
'I myself, myself, behold me,
'Tis the great gray eagle talking,
I myself, myself, the prophet,
When I speak, the wigwam trembles,
I can cure you, Hiawatha,
I can blow you strong, my brother.'"

There is not very much difference between this and the rigmarole of Paracelsus.

The reply of Erasmus shows that he was a little puzzled by the professor's pathology, but still had great confidence in his treatment.

Erasmus Roterodamus to the most skilful Doctor of Medicine, Theophrastus Eremites:

There is nothing inappropriate in wishing mental happiness to the physician by whom the Lord restores us to bodily health. I am surprised at your knowing my case so well after having seen me only once. I recognize the truth of your obscure hints, not from any knowledge of the medical art, which I have never learned, but from the painful experience of the senses. I have already in times past had pains in the region of the liver, without being able to guess at the source of the malady, and have for several years seen gravel in my urine. What the third disease (which you allude to) is, I do not quite understand, but still think it probable it may be as you say. At this time I have not much leisure for taking medicine, nor for being sick or dying, I am so taken up with the labor of my studies. However, if there is any thing that can alleviate my malady without disabling me for the time, I beg you to let me know of it. And, if you cannot do that, then explain a little more fully, in a few words, what you have already said in a rather excessively laconic manner, and prescribe other remedies which I can take as soon as I have leisure. I cannot promise you a reward equal to your energy and skill, but I will certainly promise you my gratitude. You recalled Frobenius from the shades of death, and he was a part of myself. If you now cure me also, you will restore each one of us to the other. I hope matters will so turn out that you will remain at Bâsle. I fear you may not be able to read this letter, it is so hastily written. Adieu.

Erasmus Roterodamus
(By his own hand).

From an expression in the latter part of this letter there seems to have been already a doubt whether Paracelsus would continue in the university. In fact, he had excited by this time a violent opposition among a large part of the profession, which he attributed to jealousy of his superior skill and success. He was nicknamed *Cacophrastus* by his opponents, and he sometimes alludes to this in his writings with considerable irritation. Even the crowds of hearers, who were at first attracted by the novelty of his style and doctrines, had considerably fallen off; and many of them began to perceive that the magnificent promises of his theory were not realized in practice. His habits, too, were irregular, and his career as professor was terminated by an indiscretion which may have been partly due to intoxication.

It seems he had been called to an eminent ecclesiastic suffering from gout, and had bargained to cure him, as he maintained, for a hundred florins. He gave the patient a few doses of his specific, and, when the pain was relieved, considered the cure as effected, and demanded his hundred florins. The patient refused to pay, and Paracelsus sued him in court for the money; but, on the case being heard, he was only awarded the regular fee for his visits, according to the customary medical tariff. He was so irritated at this that he assailed the judge with vituperation, and was obliged to leave Bâsle to escape the punishment for this offence.

This was in 1527, less than two years after he had been called to his chair in the university. It is said that his departure excited but little interest, as his local popularity as a teacher had already shown a marked decline. He continued, however, to practise and write in the same manner as before; and his doctrines were maintained by a large number of enthusiastic partisans.

His ideas in medicine were a mixture of astrology, alchemy, and mysticism. Anatomy seems hardly capable of being treated in this way; and yet his anatomical notions may be judged by the following description, taken from his chapter, "De Anatomia Oculorum."

He divides the consideration of the anatomy of the eyes into that of the *substance*, the *material*, and the *form*, of which the substance is from without, the material from within, and the form in both:

"1. *Substantia.*—The eyes are twins; that is, two fruits, or products, joined in the form of a cross, with reference to a centre, in order that they may have, as nearly as may be, the same integral composition. They are united in the middle, and thence look downward with the stem, and upward with the root. These trunks give off no branches, but only fruit; that is, they produce a blossom which is the material, and bear fruit which is the sight. The flower is white, the fruit is purple, and each of them has a bark, which forms the tunics. The wood is what intervenes between the tunics and the root. In the pith is situated the sight; that is, the substance of the eye.

"2. *Materia.*—The material consists of three things: namely, sulphur, salt, and mercury." (According to Paracelsus, these three were the ingredients of every thing.) "Sulphur is the flower and fruit, in all colors, according to the mode of resolution, outside the visual body. The visual body is Mercurius, in which is contained the perfected sight, without any other material. Salt is the solidification of both, since it reduces the parts into one form; that is, it completes the essence of the visual body.

"3. *Forma.*—The form is that of a cross, because the central part bears twins. Afterward, each twin passes into its own form, or rotundity, since the eyes in the body fill the place of the sun, as in a microcosm."

By "anatomy," therefore, Paracelsus did not understand the internal structure of an organ, as it may be learned from dissection, but a fanciful enumeration of vague similitudes and analogies, which might be filled out by the imagination. Even a list of the headings of his chapters would show a large proportion of similar subjects. There are chapters—

On the Mystery of the Microcosm;

The Philosophy of Theophrastus, or the Generation of the Elements;

On the Occult Philosophy;

The Treasury of Treasuries of the Alchemist;

On the Fifth Essence, or Quinta Essentia;

On Magisteria;

On Specifics;

On Elixirs; and

On the Signatures of Natural Things.

Alchemy formed a large part of the medical science of Paracelsus. The alchemists had already been busy, for perhaps a century, in their endeavors to transmute the baser metals into gold. Chemistry, as we understand it, had no existence at the time; but from the earliest periods it had been easy to see that the metals were a class of bodies having peculiar physical qualities, which gave them a certain family relationship, and separated them from other natural substances. This readily gave origin to the idea that the baser metals might all be impure conditions of the nobler or more indestructible ones, of which gold was evidently the purest and most perfect; and the object of the alchemists was to expel by some means their impurities, and so obtain from them the metal in its most perfect and valuable form. For this purpose they subjected the natural earths, the metals and their salts, to all sorts of chemical manipulations, apparently with very little regular plan, and without at all understanding the nature of the changes which took place. But in this fruitless search after transmutation they produced, in the course of time, many substances which afterward became of real value. They were already in possession of nitric, muriatic, and sulphuric acids, aqua regia, metallic antimony, terchloride of antimony, red precipitate, sulphuret of potassium, bismuth, and sugar of lead.

The alchemists, however, did not value these substances for themselves, but only as a means of finding the philosopher's stone, or tincture, which would have the power of producing gold. By the sixteenth century this embryonic science had become largely tinctured with charlatanism. The writers on alchemy used the strangest terms to describe chemical substances, and employed various signs to designate them, which were not always the same for the same substance.

Thus gold was represented either by the *Sun*, the *Lion*, or the *Swan;* silver by the *Moon* and the *Owl;* copper by *Venus;* iron by *Mars* and the *Wolf;* tin by *Jupiter*, the *Eagle*, and the *Stag;* and lead by *Saturn* and the *Mole.* Traces of this practice still exist in our own materia medica, as when we use the term "lunar caustic" for nitrate of silver, or "Saturnine preparations" for the salts of lead.

One of their most singular freaks was the general habit of using this studiously obscure language, in order to guard their secrets from discovery, even by the reader. It is not easy to comprehend why, if an alchemist wrote a book to teach us how to make the philosopher's stone, he should not tell the story so that we could understand him; or, on the other hand, if he did not wish his secret to be known, why he should write a book about it at all. But, as a matter of fact, this was a very prominent feature of nearly all the works on alchemy.

Paracelsus of course was an alchemist, and has much to say about the production and virtues of the great elixir. He claimed to be superior to the other alchemists, and to have more efficacious means of success. Here is

"*A quick and easy way to make the philosopher's stone:*

"The old Spagyrites would not have needed to go through with all this labor and tedious reiteration if they had studied in my school; they would have accomplished their object equally well, but at far less labor and expense. And now at this time, when Paracelsus is the monarch of the arcana, the period has arrived for that discovery which before me was hidden from all the Spagyrites. Wherefore, I say: Take only rose-colored blood from the Lion, and glue from the Eagle, and after you have mingled them together, coagulate them according to the old process. You will then have the *philoso-*

pher's tincture, which men without number have sought for, but very few have found."[1]

If we try to interpret this lucid prescription, we should remember that the "Lion" is one of the cabalistic synonymes of gold, and the "Eagle" one of those of tin. If gold be dissolved in nitro-muriatic acid, evaporated and heated, and the product dissolved in water, it forms a solution of the terchloride of gold. This was probably the alchemists' "rose-colored blood from the Lion." On the other hand, protochloride of tin, which is a gray, resinous-looking, and easily-fusible substance, was perhaps what they called "glue from the Eagle." It will precipitate the gold from a solution of its terchloride in the form of a brown powder.

The recipe of Paracelsus, if translated into modern language, would then read as follows:

"Take only a solution of terchloride of gold and a solution of protochloride of tin, and coagulate them;" that is, make a precipitate by mixing them together.

We should thus have, at the end of the operation, the same gold, in a different form, which had first been dissolved in the nitro-muriatic acid.

Now that we have the precious article, however, it seems that it is not yet quite ready for use, according to Paracelsus; and the operation which still remains necessary can hardly be called an inexpensive one.

"If the philosopher's tincture," he says, "is to be used for transmutation, a pound of it is first to be projected over a thousand pounds of melted gold. Then, at last, the medicine will have been prepared which is able to transform the leprous humor of the metals."[2]

Of all the arcana, or occult remedies which Paracelsus depended on in practice, the most valuable was his *Quinta Essentia*, or fifth essence, which he extracted from all sorts of substances, animal, vegetable, and mineral. He considered this quintessence as containing, in a concentrated form, all the life, power, and occult medicinal properties of the substance from which it was derived. Some of these were of extraordinary virtue. For example, he said that the quintessence of pearls, extracted by himself, had such power that with it he had restored to life and strength men who were already in the agony of death.[1] Of course, the quintessence of gold was more valuable than any of the others; and his process for extracting it is a fair sample of the laborious and fruitless prolixity of the operations of the alchemists:

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[1] "De Tinctura Physicorum," chapter iv.

[2] Ibid., chapter vi.

"Take pure gold, reduced to the smallest grains and rubbed to a powder with plumbago. Add to this, of the best white wine that can be procured, 100 parts, and white resin of the pine, 10 parts, and macerate in a glass vessel forty days. Pour off the wine, add the same quantity over again, and macerate as before. Repeat this a third time. Then take all the wine from the three successive macerations, place it in a glass vessel, well covered, and distil with a strong fire, so that it may come over rapidly. When the distillation is complete, place the liquid in a glass vessel, well covered with a blind alembic, upon a bed of ashes hot enough to burn the hand. Keep it in this condition until nine parts of the liquor are consumed or dried up, and only the tenth part remains. To this remaining liquid add an equal quantity of the white of egg, shake the mixture and distil together. At first distil slowly and a white liquid will come over, which should be set aside. Then increase the heat until the vessel is red-hot, when there will come over a material of thin, honey-like appearance and a strong odor. Keep this, for it is the fifth essence of gold, and a royal medicine."[2]

I have the highest chemical authority for saying that the result of this process would be only ammoniacal and empyreumatic substances from the destructive distillation of albumen and some ingredients of the wine. His "fifth essence" would not contain the least particle of gold, nor any thing derived from it.

The medicine of Paracelsus was also deeply imbued with the cabalistic doctrine, which was then very much in vogue, and which was the most senseless and futile of all the many delusions of the period. This was the science of correspondences and sympathies in Nature; the macrocosm and the microcosm, or the imaginary relations between the planets and terrestrial objects; and the signatures of things, or the external marks by which their occult sympathies and relations were supposed to be indicated. The cabalistic writings are even more difficult to comprehend than those of the alchemists, although they undoubtedly contained ideas which were more or less understood at the time. But they were all mystical in character, and never in the least degree connected with any thing like scientific research or observation.

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[1] "Archidoxorum," liber iv., "De Quinta Essentia," p. 4.

[2] "De Quinta Essentia," pp. 5, 6.

Some of the writers on the history of medicine speak of Paracelsus as a reformer, and of the propagation of his ideas in the sixteenth century as a reformation. This reformation was the abandonment of the principles of the Galenic school, as to the temperaments and the four elements, and the adoption of more powerful remedies extracted by chemistry from mineral substances. The writings of Paracelsus himself show how little this movement deserves the name of a reformation. Chemistry did not begin its development, as an intelligible science or art, until at least a century and a half after his death. He employed chemical manipulations, and used their products in the treatment of disease; but it was in the blindest and most reckless manner, without any rational study of the symptoms, the natural history of the malady, or the real action of the medicines. His pharmacopœia was a collection of arcana, magisteria, quintessences, and specifics, based mainly on the doctrines of alchemy and the cabalistic art. As Daremberg said, reformations in medicine are not made by men who are strangers to anatomy and physiology, mystics in chemistry, and empirics in practice; they come only from the gradual development of medical science by slow and laborious investigation.

If we take all his qualities together, Paracelsus may be regarded as, on the whole, the most complete and typical representative in history of the thorough-paced charlatan. A rampant, blatant, boasting, ignorant vagabond, with a face of brass and a tongue like a race-horse, it is difficult to say whether he did not really believe himself, in his blind way, the medical enchanter he pretended to be. Unable to comprehend the existence of genuine qualities in others, he loudly claimed the possession of superior knowledge, without ever deigning to show how he had obtained it, except by a confused kind of intuition, which we know has no place in the natural sciences. He imposed for a time on the credulity of a credulous generation, and has left his name as a curious monument of mystification and folly in the history of medicine.

ART. II.—*Central Galvanization.*[1] By A. D. ROCKWELL, M. D., Electro-Therapeutist to the New York State Woman's Hospital.

IN a comprehensive article on this topic of central galvanization, it would be necessary to refer more particularly to the physiology of the central nervous system, and to review the subject of electro-physiology; but, as my aim is practical, I simply propose to consider a few questions that naturally arise in relation to the direct effect of electricity on the central nerves, together with the *modus operandi*, and clinical results of this peculiar method.

I. *Is it possible for electricity* (*in medicinal or therapeutical doses if I may so speak*) *to penetrate to the brain, spinal cord, and sympathetic, and directly affect these organs?* In regard to the faradic current in its relations to the brain and spinal cord, all experiment and experience answer decidedly in the negative. In the construction of certain helices, the combination of wires is such that the current proceeding from them may produce an undoubted glimmer before the eyes, simulating the flashes of light following galvanic excitation of the retina.

Even from the coils in most ordinary use, we obtain a current that is sufficient, in certain pathological conditions of the brain, to cause dizziness and flashes of light, while in irritable conditions of the spinal cord it is not unusual for a mild faradic current to be followed by the same phenomena of tingling and numbness in the extremities that are frequently observed after galvanization of the spine. Now, these effects are purely the result of reflex action, for, in the healthy brain, not only does faradization fail to produce dizziness, or to excite the function of any of the nerves of special sense, but patient experiment, by the aid of the rheoscopic frog, has failed to detect the passage of even very intense currents through the bony covering of the head.

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[1] Read before the New York County Medical Society.

The great sympathetic is readily influenced by the faradic current, but it is impossible to localize its effects in special ganglia, and because of the very general way in which it is alone capable of affecting this system, I prefer to exclude it in the consideration of the electrical treatment of the central organs. So far as it concerns the great sympathetic, it is best treated under the head of general faradization. The galvanic current has far greater power. Not only do the observed effects of its application to the head teach, but actual experiment proves, that it readily penetrates to all portions of the brain.

How quickly does it affect every nerve of special sense, and cause its function to be manifested! Let its gentle influence pervade the brain-substance, and the peculiar metallic taste, which is the guide to its efficient action, is instantly perceived. Interrupt the steady flow of its current, and a flash of light follows as evidence of retinal excitation. Pass it transversely through the head for a moment, and, though nothing may be felt, or seen, or tasted, yet the instant of the interruption of the current, vertigo follows, intense in proportion to the strength of the galvanic action.

All these phenomena point unmistakably to a direct central action of the current, and the confirmation is now perfect through the well-known and ingenious experiments of Erb with the galvanoscopic frog. The sympathetic nerve is very susceptible to galvanic influence. The first experimental researches on the function of the sympathetic nerve are familiar and yet interesting.

It was pointed out that after section of the cervical sympathetic in a living animal the circulation became more rapid, and the heat and susceptibility of the head decidedly increased.

These phenomena which were caused by paralysis of the vaso-motor nerves immediately disappeared when the cephalic extremity of the sympathetic was galvanized, only to return, however, when this influence was discontinued. The current caused constriction of the paralyzed and dilated arterioles through its indirect influence on the vaso-motor nerves.

II. *What are the observed physiological effects of galvanization on the central nervous system?* I have already spoken of its influence over the senses of sight and smell, and the readiness with which it causes vertigo when passed transversely through the brain.

Let any one experiment a little with the current, and he will find, singularly enough, that when one electrode is placed on the forehead and the other on the occiput, or one on the summit of the head and the other on the stomach—after the method of central galvanization presently to be described—galvanization is followed by little if any tendency to vertigo. On the contrary, when a current of even feeble tension is passed from temple to temple, or from one mastoid bone to its fellow, very decided dizziness is at once perceived, which continues during the operation of the current, and becomes most decidedly manifested at the moment the circuit is broken.

During the passage of the current, there is a very marked and quite irresistible tendency to lean toward the positive pole, while objects in view seem to move in the same direction. When the circuit is opened there is a reversal in the direction of the seeming movements, and the experimenter instantly bends in the opposite direction, toward the negative pole.

For these phenomena an ingenious and plausible explanation is given by Hitzig: When the current passes from the forehead to the occiput, the right and left lobes of the brain and all that pertains to them are equally or symmetrically influenced, and little if any dizziness is perceived. Place, however, the anode upon one temple and the cathode upon the other, and mark the readiness with which dizziness is produced.

In this operation the brain is no longer symmetrically affected. One hemisphere is in a condition of anelectrotonos or diminished irritability, while the other is in a condition of catelectrotonos or increased irritability, or, as it is expressed, there is a falsification of the muscular sense, a disturbance of the equilibrium, and the apparently involuntary inclination toward the anode is in reality a voluntary effort to restore the imaginary loss of balance.

These, then, are the principal physiological results of external galvanization of the brain.

The observed effects of galvanic excitation of the cord and sympathetic are less marked, but no less real than the phenomena following galvanization of the brain. Galvanization of the sympathetic is of itself such a comprehensive topic for speculation that in this paper it is impossible to do more than call attention to the fact that both clinical observation and the ophthalmoscope render it evident that external applications of the current appreciably affect its ganglia and powerfully influence the vaso-motor system of nerves.

The so-called diplegic contractions, to which attention was first called by Remak, give the strongest evidence of the possibility of directly influencing the cervical ganglia of the sympathetic by external galvanization. He was the first to note the fact that, when the positive pole is placed in the auriculo-maxillary fossa, and the negative in the neighborhood of the sixth cervical vertebra, and a current of sufficient tension is used, contractions of the muscles of one or both hands are frequently observed. Subsequently, Fieber confirmed these experiments by exposing the sympathetic in living animals and submitting it to the action of the current. In my own practice, I have so frequently, and under such a variety of circumstances, observed this phenomenon, that I cannot hesitate to believe that direct stimulation of the cord and the phenomena of diplegic contractions are related to each other as cause and effect.

I first entertained the idea of directly influencing the central nervous system, in certain morbid conditions, by the galvanic current more than four years ago. It is possible that the method of central galvanization had been before attempted, especially by some of the German school; at all events, I had not heard of any systematic endeavors in this direction, and it is certain that little if any thing had been accomplished by this method in the treatment of the wide variety of nervous disorders where its value has now been so thoroughly tested.

My first experience in the use of central galvanization was not at all satisfactory, and for two reasons: 1. We had then no galvanic apparatus that was certainly reliable, and in which all the essential factors were combined for the ready regulation and modification of the current in its application to sensitive conditions. 2. We confined our endeavors mostly to those forms of central disease (structural in character) which in the light of subsequent experience have proved in the majority of cases to be little amenable to the therapeutics of electricity.

In the most thorough form of central galvanization, one pole (the anode) is placed on the vertex of the skull, or, as it is generally termed, the cranial centre, while the cathode is applied to the epigastrium.

A current, varying in intensity and in the length of its application according to the exigencies of the case, is now allowed to pass. It is not necessary, as a rule, to moisten all the hair of the head and apply the electrode to its entire surface. I prefer rather to wet a narrow tract from the cranial centre to the region of the sixth cervical vertebra or ciliospinal centre, so that I can slide the electrode along the surface, and thus, during an entire *séance*, keep up a constant influence and avoid even the possibility of an interruption of the current with its resultant shock. From the cilio-spinal centre the electrode is passed gradually along the spine to a point opposite the epigastrium, the seat of the cathode.

In regard to the length of these *séances* each case must be in some measure a law unto itself. In speaking elsewhere of faradization I have remarked that there was to it a more varying degree of susceptibility than to almost any other agent. This statement applies equally if not more so to central galvanization; and I speak most earnestly, and from considerable experience, when I say that a careless and ill-directed application of the galvanic current to the central nervous system may produce absolute physical injury as well as contribute to the already-swollen catalogue of evidence (both positive and negative) against electro-therapeutics. Patients are often treated who are so susceptible to central galvanization that the current from two or three ordinary cells will produce decided effects that are both immediate and secondary. The immediate effects are the result of excitation of the nerves of special sense and are of course temporary; the secondary are manifested a short time after the cessation of treatment, and may be permanent. These secondary effects, if favorable, are seen in increased mental clearness; in the relief of the various forms of neuralgic pains and muscular twitchings that are of central origin, or in the restoration of lost power of sleep. In another patient it may require ten cells to effect these same results. So far, however, as positive directions can be given, I may say that rarely should the applications to the head be longer than two or three minutes, and in many cases from fifteen to thirty seconds is all-sufficient. I need hardly say that in other instances galvanism is contraindicated; even the slightest current tends to evil rather than good.

It is especially important, in the treatment of the highly-excitable and nervous, that no sudden shock or flashes of light should be produced.

As a rule, the metallic taste, which is instantly noticed by the patient when even the mildest current is used, is a sufficient guide for a first or tentative application. Subsequently in many cases the current may be increased, even until its stinging or burning effects are observed at the stomach. While in the great proportion of cases the metallic taste appears long before the current is sufficiently intense to be felt in the slightest degree at either pole, occasionally the order is reversed, and actual pain may follow the application before there is any appreciable excitation of the gustatory nerve. In such cases I have observed that the brain is in a remarkable degree tolerant to the effects of the current. In regard to the electrodes, let me simply say that the positive, or the one at the head, should be several times the size of its fellow at the stomach.

The galvanometer is to me an indispensable appliance in the use of central galvanization. All galvanic apparatus that I ever used are liable at times, from failure of some one of the many factors that contribute to an equal and constant flow of the current, to fail us at the critical moment. We frequently desire to use a current of insufficient strength, when applied externally, to excite in the patient the sensation of feeling, or any of the nerves of special sense. To be absolutely sure that the current is operating evenly and well, it is necessary either to feel it or to see its effects, and the only ready method of causing it to be manifest to either the feeling or taste, is to apply the electrode to the tongue. This, however, is not only disagreeable to the operator, but, if persisted in, may be of decided injury. The galvanometer, taking the degree as its unit of measurement, detects the mildest current, and relieves the mind from all doubts as to its efficient action.

So far as my clinical observation extends, I may say that it is in the varied forms of hysteria, hypochondriasis, and melancholia, in neuralgias of central origin, in spinal congestion and irritation, in chorea and kindred spasmodic affections, that central galvanization seems to be especially indicated.

The cases that follow are all taken from private practice, and, as will be observed, the success achieved in every one is either complete or approximate. I am very far from wishing to be understood that the results of these cases are typical of those that may be expected in every instance where central galvanization is apparently indicated. As I have frequently remarked concerning other methods of electrization, the failures are sufficiently frequent. I have purposely selected from my clinical note-book a number of well-authenticated cases, that illustrate the very best results of central galvanization:

Melancholia of Two Years' Standing in a Young Married Lady.—Complete Recovery under Central Galvanization after Failure of Persistent Internal Medication and Faradization.

Case I.—Mrs. Y., a married woman, aged twenty-five, came first under my observation October 8, 1871, in the seventh month of her pregnancy. Her mental condition was lamentable in the extreme. There was chiefly a perversion of the whole habit or manner of feeling, such as so frequently follows actual intellectual derangement. She confessed and bewailed her want of interest in or love for those who were nearest to her, and evidently suffered most intensely from a profound feeling of depression and misery—a vast and formless idea of utter desolation. The patient appreciated her condition, would reason concerning it, and acknowledge that there was nothing real to which she could point as a cause for her misery.

These wretched feelings were not altogether new, but for over two years had in a modified form annoyed her considerably. Bitten slightly by a favorite dog, she merged immediately into a condition that may be called hypochondriacal melancholia, with an exaggerated notion of the danger she had incurred. She had been treated persistently but without avail, and as a *dernier ressort* faradization was attempted. It utterly failed in its effects, and in good faith the patient was encouraged to hope that with her delivery, her mental balance would return. The child was born, and three months subsequently I was again called to see the mother, only to find her condition more aggravated than at any previous time. I now resolved to make use of central galvanization, and employed a current from six ordinary-sized zinc carbon-cells, with a sitting of four minutes. The patient was not at all improved by the *séance*, but seemed, if any thing, slightly more sensitive to external impressions.

In a couple of days the same application was again tried, with the evident result of decidedly exciting her mind. A third effort was made with but three cells, from which the current was just sufficient in tension to call into action the sense of taste. From this trial the patient experienced undoubted relief, and at intervals of a day, the application without being varied excepting in the length of the *séance*, was repeated for some two months. Although during the treatment two or three slight relapses occurred, yet, on the whole, the improvement was steady and satisfactory, and at the close of the "central" treatment, when she was placed entirely in the care of Dr. William J. Donor for uterine difficulty, her recovery was complete.

Spasmodic Cough, unique in Character and of Unusual Persistency and Severity.—Recovery under Central Galvanization.

CASE II.—Miss H., aged sixteen, was transferred to my care by the family physician, Dr. H. H. Gregory. The case is an example of an unusually susceptible nervous organization, and is a good illustration of the readiness with which many so-called nervous symptoms change their seat and character. The distinct and positive features that stand so boldly relieved in the progress of this particular case, may serve to explain the more subtle and less marked change of symptoms that so often occur in certain nervous diatheses, only to perplex and to set at naught the resources of therapeutics. The patient was a lively, impressible girl, prone to physical indiscretions, and careless of consequences. She had suffered for a number of years from frequent and unusually severe attacks of sick-headache, but, as soon as the paroxysm had passed away, she regained her usual strength and buoyancy. The sudden and unexpected death of a sister, naturally enough, stirred up her emotional nature to its depths, and, together with an imprudent exposure of her person to cold and dampness, seemed to be the exciting cause of a most remarkable, persistent, and distressing cough, which, slight at first, reached its height in severity in the month of March, 1872. Amid the numberless efforts that were made by both internal medication and inhalations, but one remedy seemed to be of the slightest service. For a time the paroxysms seemed to abate somewhat under the influence of chloral, although no permanent benefit was derived from its use. When, during the latter part of July, I first saw the case, through the kindness of Dr. Gregory, the following was the prominent characteristic of her paroxysmal attacks: Every one will instantly recognize the peculiar harsh or grating sound which is so often elicited by the downward thrust of a saw that is improperly handled or insufficiently oiled. The cough of our patient exactly simulated this sound, and, when it first fell upon my ears, I supposed that some one was sawing in the adjoining room.

During a paroxysm, the expiratory efforts were just one a second in frequency, and from a dozen to sixty in number.

The violence of the attack would rack her terribly, and when prolonged was followed by considerable exhaustion. The paroxysms themselves occurred so often, some twenty or twenty-five times during the twenty-four hours, that she was necessarily obliged to give up all attendance at places of public resort, and confine herself mostly at home.

On account of my absence from the city most of the month of August, the patient was not fairly submitted to my treatment until September. I then submitted her to a thorough laryngoscopic examination, and found nothing abnormal, with the exception of a slight tendency to congestion of the vocal cords. To dissipate any doubt in regard to the existence of pulmonary disease, the patient was thoroughly examined by Dr. Austin Flint, who pronounced the lungs to be in a healthy condition, and agreed as to the essentially nervous origin of the symptoms.

In the treatment of the case by central galvanization, I was gratified to observe, after the first few tentative applications, an appreciable improvement in the character of the cough. Instead of that harsh and painful sound resulting as we believed from the exceedingly tense condition of the vocal cords, the cough assumed a softer or looser character and was much less disturbing; this we conceived depended on the decreased local spasmodic action. Freed from wearisome details, the subsequent history of the case is included in the simple statement that the patient improved from time to time, until, after two months of treatment, and the administration of some thirty-five applications, the recovery was perfect.

It is interesting to note that she has been afflicted by no return of the sick-headaches from which she had so constantly suffered, before it was swallowed up in this last attack.

The following case, although it seemed for a time to defy all attempts at permanent relief, and at last yielded with unusual reluctance, may certainly be regarded, taking into consideration the seeming hopelessness of the symptoms, as the best result of central galvanization in spinal irritation and congestion that I have witnessed. I say spinal irritation and congestion, because the symptoms that are supposed to be pathognomonic of one or the other of these conditions are, in the course of an ordinary clinical experience, so frequently observed to mingle, or as it were to overlap and run into each other, that it is impossible in these cases to decide that either irritation or congestion alone exists as a distinct disease of the cord.

Spinal Irritation and Congestion in its most Severe Form, and of Several Years' Duration.—Permanent and Perfect Recovery follows General Faradization and Central Galvanization.

Case III.—Miss H., a young lady of twenty-five, was placed under my care by Dr. J. C. Halsey of Brooklyn. The most marked symptoms were, on the one hand, an excessive tenderness at various points of the spine, from the upper cervical to the lumbar region, neuralgic pains in the abdomen and extremities, nausea and spasmodic cough with palpitation, and on the other tingling and numbness in the fingers and toes, with an inability to freely use the legs, that simulated an incomplete paraplegia. The first-named symptoms pointed to irritation, while the latter indicated congestion of the cord, and, viewing them as a whole, it seemed evident that both conditions were present. The patient was utterly incapacitated for the slightest exertion, either mental or physical, and for several years existence had proved a burden to be borne with fortitude, rather than a joy to be loved and cherished.

It may be said that she had never been robust, but from childhood had suffered from palpitation and shortness of breath, that indicated a point in the upper spinal tract that might at any time prove vulnerable to either physical or mental influences. In this unfortunate case, every thing in the way of the usual and accepted methods of treatment had been tried, and had utterly failed, and by the advice of the late Dr. H. D. Bulkley, Dr. Halsey decided to try electrization, and requested me to take charge of the patient. She was first submitted to the tonic influence of general faradization, and with such decided benefit that, after some fifteen applications, most of her symptoms decreased in severity, and she was able to ascend the stairs and walk two or three blocks with comparative comfort. More than this, general faradization on further trial failed to accomplish. I then resorted to exceedingly mild galvanization of the whole length of the spinal cord, and with immediate beneficial results. The tenderness along the spine gradually decreased, until it altogether disappeared. The nausea and neuralgic pains, tingling and numbness in the extremities, slowly but surely became less marked, the limbs became strong, until finally the patient fully recovered, and with more strength and vigor than she had ever had.

Sacral Neuralgia, associated with Hyperæsthesia from the Waist downward, and with Tonic Muscular Contractions of one Leg.

CASE IV.—At the request of Dr. Fisher we called on Mrs. M. (the wife of a physician), who for many months had been an inmate of the private hospital of Dr. Charles F. Taylor.

We found her in bed, utterly unable to assist herself to any extent, and with a deep-seated expression that indicated a condition of constant pain and anxiety. On examination, we found the limbs somewhat wasted, and one of them permanently drawn up by gradually-developed muscular contractions. The most marked feature of her disease, however, was a condition of excessive hyperæsthesia extending from her waist downward. Not only was the patient unable to move her lower limbs, or to have another move them, without experiencing the most horrible pains, but around the waist and hips, and over the abdomen, she shrank from the slightest touch. Dr. T. Gaillard Thomas, under whose special care she was, and who had treated her for uterine difficulty, regarded the case as one of neuralgia of the sacral nerves, and, in the hope of affording relief, had removed the coccyx. It proved to be of no service, and all methods for her relief seemed unavailing. We began treatment March 5, 1871, by administering an exceedingly mild and fine faradic current to the neck, spine, and abdomen. Indeed, the current was so weak as to be hardly appreciable to the patient.

These applications were repeated some four or five times a week, with a gradually-increasing strength of current, and in the course of a month the hyperæsthesia had been so far relieved that the hand could be pressed upon the body with a considerable degree of firmness, and passed all over the body without causing pain. The pains that were continually shooting down the limbs were not appreciably relieved until after we resorted to central galvanization, i. e., galvanization of the lumbar and sacral regions of the cord.

This method, persevered with, dissipated the remainder of the hyperæsthesia, which had hung fire under local faradization, and very greatly relieved the neuralgic pains in the limbs.

The patient was now able to sit up in bed, and the distressed expression of countenance had given place to an appearance of hope and even cheerfulness. At this stage, Dr. Fisher, on days when electricity was not administered, began to accustom her to the use of crutches, gradually lengthening them as she was able to increase the number of steps. At first, she was able to take but two or three steps, but in six weeks or two months she could not only move about her room and the halls for half an hour at a time, but on several occasions with assistance went to the top of the stairs and returned.

At one time she suffered a relapse, and was compelled to submit again to local treatment at the hands of Dr. Moses, but from this she rallied, and after having been in various ways treated for a year, she was sufficiently recovered to be able to undertake a long journey to her home. She there continued to improve with great rapidity, until she was able to attend with ease to her household duties, and in every sense was quite well. In this case it was the faradic current that first relieved the hyperæsthesia, but, after it had accomplished all that it was possible for it to do, galvanization of the spinal cord dissipated the remaining sensitiveness, relieved the neuralgic pains, and rendered possible the efficient assistance of Drs. Fisher and Moses, which aided so greatly in the recovery of this supposed hopeless case.

Cerebral Congestion associated with Vertigo and Numbness of the Left Side.—Symptoms aggravated by Faradization. Recovery under Central Galvanization.

CASE V.—Mrs. H. was directed to us by Dr. A. Brayton

Ball, to be treated for symptoms of cerebral congestion. Her general condition was much below par, and her menstruation, though regular, was painful and prolonged from eight to ten days. Severe headaches were frequent, and for two years she had suffered from decided numbness of the whole left side sufficient to prevent much labor or exercise. Faradization, both general and local, was essayed without good effect; indeed, the numbness and vertigo were decidedly aggravated. The second application, three days subsequently, was made with a current generated from four zinc carbon-cells. The positive pole was applied to the top of the head, and the negative immediately below the sternum. A slight increase of numbness was observed even from the weak current used, but, in a few hours, this effect passed away leaving hardly a trace of the usual anæsthesia. This treatment was continued, at intervals of several days, for over a month, during which time she was annoyed but little if any by either vertigo or numbness.

Numbness of the Extremities, with Distressing Heat of Head, etc.—Mild Central Galvanization aggravates the Head-symptoms.—General Faradization is followed by decided Relief.

Case VI.—On February 10, 1872, I was called to Mrs. P., who was under the professional care of Dr. Thomas Sabine. For several years the patient had been an invalid, suffering from ulceration and displacement of the womb. She was of a decidedly nervous organization, exquisitely sensitive to all external impressions, and yet her general appearance, so far as regards color, flesh, and expression, was indicative of a fair degree of health. There was great pain and tenderness over the left ovarian region, while at short intervals severe paroxysms of neuralgia, seated in the head and left shoulder, occasioned much distress. The attendant symptoms, however, which more especially interest us at this time, were the constant burning at the top of the head, and an annoying numbness of the extremities. The heat of head was so great that she felt obliged on nearly all occasions to wear cloths dipped in ice-water. I at first made use of the galvanic current passing through the brain and sympathetic, a current from but four ordinary-sized zinc carbon-cells. The effect was most unpleasant, since there immediately followed a decided increase in the sense of numbness and heat, which did not abate under twenty-four hours. I now, by means of the moistened hand, applied, to all portions of the head and neck, a mild faradic current, extending the applications through sponges to the entire surface of the body.

A few such *séances* not only relieved the neuralgia of the head and coldness and numbness of the extremities, but in a great measure dissipated the distressing heat of head from which she so constantly suffered.

How can we account for the diametrically opposite effects of the currents in this and in the foregoing case? The explanation seems sufficiently easy. In the first instance cerebral congestion undoubtedly existed. The constant current was successfully operative, since it alone has power to penetrate to the brain, and to directly influence the circulation through the vaso-motor system of nerves.

In the second case it was evident that there was no marked disturbance of the circulation.

Most of her symptoms seemed dependent on a generally hyperæsthetic condition, which was aggravated when the sensitive central organs were submitted to the direct influence of galvanization, while the faradic current, by its well-known soothing and tonic effect on the peripheral nerves, and possibly by a gentle reflex influence on the brain and spinal cord, was speedily beneficial.

General Chorea, with Inability of the Patient to walk, feed himself, or distinctly speak.—Recovery under Central Galvanization, after the Failure of General Faradization and Medication.

Case VII.—Master S., a little boy about ten years old, came to us through Dr. J. O. Farrington.

The patient had for some time suffered from general chorea of a decided character, but during the last few weeks it had so increased in severity that he was unable to walk or even feed himself. All his extremities as well as the face were in constant motion; his utterance was indistinct, and in weight he had decreased very much. There was no hereditary tendency of this character in the family, and the only cause to which the symptoms could plausibly be attributed was a fall from a horse, which severely jarred him, some weeks before the disease manifested itself.

The treatment was varied. Fowler's solution and certain other remedies, which I do not now recall, had been faithfully tried, but without benefit. We began with mild general faradization, but, as the results did not accord with our expectations, we abandoned it and essayed very gentle central galvanization.

During the first week of this treatment no appreciable benefit seemed to be derived, without it was an improvement in sleep.

Soon after this, however, the effect observed was decided. His appetite became better, resulting naturally in increased weight; coördination of movement rapidly became possible, the utterance distinct, and in a few weeks recovery was complete.

Treatment was discontinued in February, 1871, and to this date there has been no evidence of a return of the disease.

Chorea, of Ten Months' Standing, of the Left Side and Right Arm, in a Girl of Eleven.—Recovery in Ten Weeks under Central Galvanization.

Case VIII.—M. R., a little girl, aged eleven, was directed to me by Dr. H. H. Gregory of Harlem. Some ten months before, the mother first observed slight convulsive twitchings of the left hand, which gradually increased in severity until in a few weeks the member was quite useless. In two or three months the left leg became choreic, and soon after the disorder extended to the right arm. It was one of those cases which obstinately resist ordinary internal medication, and was hence considered a fair opportunity to test the virtues of central galvanization. The treatment was given every other day, but for three weeks no apparent impression was made upon the disease.

During the fourth week the symptoms somewhat abated, and from this time forth the improvement was uninterrupted, until, in ten weeks from the beginning of the treatment, recovery was perfect.

ART. III.—*Facial Paralysis treated by a New Method.*[1]

By WILLIAM DETMOLD, M. D.

EVERY practitioner, I presume, is familiar with facial paralysis. I do not now allude to that paralysis which follows an apoplectic attack, but to that local affection—paralysis of one side of the face—which comes on suddenly, at times, somewhat analogous to infantile paralysis of the lower extremities, in consequence of a draught of cold air, at other times without any appreciable cause, and which generally yields to various kinds of treatment; and, in most cases, probably would get well without any treatment in from four to six weeks. But occasionally we encounter cases which assume a chronic character, and, defying the ordinary methods of treatment, lead to a permanent distortion of the face.

I reported, some years ago, to this Academy, some cases of facial paralysis in which I successfully performed myotomy. I only reported these cases orally, and I believe they never have been put on record; but, as they form an interesting contrast to the case which is the subject of this paper, I will briefly record them here:

CASE I.—Miss H., about twenty-one years of age, had, in early infancy, paralysis of the face, which resisted every effort of treatment; for, as the family were in very affluent circumstances, it is to be presumed that the case had not been neglected. When I was consulted, I found, on one side of the neck and below the ear, a number of deep, adhering scars from scrofulous ulcerations, which possibly may involve some branches of the facial nerve. Whether they were the cause of the paralysis I do not know, for, as the mother of the young lady had died years before, I could not obtain a satisfactory history of the case. The prominent feature of the affection was a strong contraction of the muscles of the other side, which drew the mouth considerably over to that side. As I had reason to suppose that the ordinary methods of treatment had been exhausted, evidently without effect, I did not deem it worth while to go over the same ground again; but I determined at once to divide the contracted muscles. I made, on the inside of the cheek, a semicircular incision through the mucous membrane, dividing every thing, till I felt that I had reached the cutis. The incision commenced near the ala of the nose, and was carried around the fibres of the orbicularis oris to near the middle of the lower lip, thus dividing the insertion of all the muscles that attach themselves to the orbicularis on that side. There was some bleeding, which, however, yielded to pressure, and I had the satisfaction of relieving the deformity almost entirely—at any rate so far that what remained appeared more like a trick or bad habit than a deformity. When the face was at rest, nothing was apparent; only when the muscles were in action, especially in laughing, there was still a contraction visible, and even that, I think, might have been cured by repeating the operation, but the young lady was so well satisfied with the result obtained that she would not consent to a second operation.

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[1] Read before the New York Academy of Medicine, March 20, 1873.

Case II.—Although this case does not strictly come under the name of facial paralysis, yet, as the treatment was analogous, its brief report here may not be out of place:

Sergeant B., during the Mexican War, received, at the battle of Cerro Gordo, a gunshot-wound, the ball entering the mouth, carrying away a portion of the hard palate, breaking the upper part of the ramus of the lower jaw, and making its exit below and behind the lobe of the ear, probably dividing the facial nerve. I saw him several years afterward. There was considerable deformity, besides anchylosis of the lower jaw, but the object of his consulting me was the eye of that side. The orbicularis palpebrarum seemed entirely paralyzed; the upper lid was forcibly drawn up, so that the eye could not even be partially protected by the forcible rolling upward of the ball as we see it in the ordinary cases of paralysis, where the lids cannot be completely closed. The cornea, in consequence of the constant exposure, had become vascular and opaque, and the constant irritation from that source induced the man to apply to me, upon the advice of his physician, for the purpose of having the eyeball removed. Before proceeding, however, to that extremity, I determined to give him the benefit of myotomy. I made a semilunar incision below the supra-orbital ridge, and divided the levator-palpebræ superioris before its fan-like insertion into the tarsus. The lid dropped immediately, and, even before the external wound was healed, followed the motion of the lid of the other eye. In a few months the cornea lost its vascularity and opacity, and there was scarcely a trace of the previous paralysis of the lid remaining.

In both the foregoing cases the prominent feature was contraction of the now paralyzed muscles. I therefore tried, by dividing them, to put them more nearly on a par with their paralyzed antagonists, and in both cases success justified the attempt.

The case which is the proper subject of this paper is of an entirely different character, there being hardly any muscular contraction, and therefore an entirely different mode of treatment became necessary. That is the reason why I have placed these cases here in juxtaposition.

Miss N., now about eighteen years old, was seized, when about two years old, with one-sided paralysis of the face. A number of physicians have attended the case from time to time and in succession, but without result. She tells me that I myself have been consulted years ago in the case, but that I have not done more or better than the rest. During a recent visit to Europe the father of the young lady was advised to apply to me, and thus I was again consulted. The patient now presents a very marked case of paralysis, the main feature of which is not contraction of the other side, but in consequence of complete inaction of the zygomatic muscles and the levator anguli oris, a heavy drooping and hanging down of the angle of the mouth. Knowing that the ordinary methods of treatment, such as stimulating frictions, hot douches, enemata, use of strychnia, electricity, etc., etc., had been tried conscientiously and without effect, I determined to try what mechanical means would do. I beat a wire into a hook, which I put into the drooping corner of the mouth, and, drawing it up, bent the wire over and behind the ear. I recommended the patient to keep it on overnight, trusting that, by entirely relaxing the paralyzed muscles, and supporting the dragging weight, I might somewhat relieve the defect.

She reported herself next morning full of joy. The result exceeded my most sanguine expectations. After one night's use of the wire, the drooping of the mouth had diminished in a very marked degree, but the wire had cut into the corner of the mouth and made it sore. I therefore ordered an instrument to be made of silver by Otto & Rynders, which should obviate the difficulty. It consists of a flat hook, with the edges turned out, and terminating in a wire hook, which goes over the ear. She wears this instrument steadily at night, only omitting it when the corner of the mouth gets sore; and she is steadily improving.

It then occurred to me that I might make this instrument still more effective if I could combine with it a permanent and continuous galvanic current through the paralyzed parts by having it made of two different metals, thus forming as it were a single cell of a galvanic battery. With this view I had the flat hook which enters the corner of the mouth made of platina, and the wire terminating in a plate behind the ear, made of zinc. Mr. Charles T. Chester, who was kind enough to make this instrument, gives in a note to me the following account: "I charged the zinc plate with salt and water. I have no exact instruments to measure quantity of current passing, but it holds my galvanometer at ten degrees deflection through the resistance of nine hundred British Association units. A steady current of appreciable power constantly flows through the part when the velvet (which covers the zinc plate) is moistened.

"I am fully aware that the mode of application is somewhat opposed to the generally-accepted theory that the galvanic current which runs in the direction from the hard metal to the softer should correspond with the direction of the current of the nerve-fluid, that is, from the centre to the periphery. But, on the one hand, I do not consider the force of this theory sufficiently demonstrated, and, on the other hand, I did not want to put the softer and easily-oxidized metal into the mouth. Consequently, when my instrument is applied, the galvanic current, instead of running with the nerve-current, runs opposite to it, but, whatever the direction is, the galvanic current runs exactly through the affected and paralyzed parts."

I must not omit here to remark that during the time the galvanic instrument was being made, I had given the silver instrument as a model, and that consequently for about a week no instrument was worn by the patient. At the end of the week a considerable relapse of the paralysis was noticeable, showing the necessity of a long-continued use of the instrument.

The galvanic instrument has now been worn for a few weeks, and the patient is steadily improving; but as the recovery had already far progressed and was steadily progressing, before galvanism was brought into coöperation, I am unable to say what share in the benefit, or whether any, is due to the galvanic current, to which, on the whole, I do not attach as much importance as to the mechanical support. The application, under the circumstances, I believe and claim as new.

I have thus briefly put representative cases of two classes of facial paralysis together: one where the contraction of the the now-paralyzed muscles forms the prominent feature, and the other where the inaction of the paralyzed muscles is prominent; and I have shown two entirely different methods of treatment of the two classes; but I have no doubt that many cases may occur where both methods of treatment might be advantageously combined.

Art. IV.—*The Effects of Tension and Relaxation of Muscle upon Electro-Muscular Contractility.*[1] By William R. Fisher, M. D.

A series of experiments which I have made, upon both healthy and paralyzed muscles, have satisfied me of the truth of the following conclusions:

1. That the relaxation of a muscle promotes its electro-muscular contractility.

2. That the stretching of a muscle diminishes its electro-muscular contractility.

The muscles of the forearm supply the most convenient and satisfactory means for demonstrating these facts. The extension and relaxation of these muscles can be regulated easily by changing the position of the hand; there is no difficulty in isolating the particular one which we may wish to subject to the electrical current, nor is there likely to be any interference with the result from the presence of an obstructing layer of fat. The biceps and triceps brachii also answer very well. Muscles having broad origins or insertions, such as the deltoid, for example, are not good subjects for experiment, because in altering the position of the limb, so as to extend or relax the muscle, the position of the electrodes is unavoidably changed, and fibres are brought under the electrical current other than those upon which the experiment was commenced, and the result is vitiated. I have found also that the fleshy mass of the thigh is unsuitable, partly on account of the difficulty of isolation, which has been referred to, and partly on account of the resistance offered by the adipose and fibrous tissues. In one case upon which I experimented, the results which I had expected to accomplish were directly reversed; i. e., when the quadriceps extensor cruris was relaxed, the electro-muscular contractility was not so great as when the knee was bent and the leg hung pendent. This was to be attributed, as I believe, mainly to the layer of fat which lay between the electrodes and the muscle, and which offered a greater resistance to the passage of the current when the tissues of the thigh were relaxed, than when they were rendered tense by extension.

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[1] Read before the Electro-Therapeutical Society of New York.

In experimenting upon healthy muscle, I adopted the following method of procedure: Suppose that the muscles on the dorsum of the forearm were chosen as the subjects for investigation. The hand was extended strongly so as to relax them as far as possible. One electrode was placed near the external condyle, and the other about midway down the forearm, so as to include between them a portion of some one of the muscles of the region. The current was reduced in strength until it reached the minimum point at which muscular contraction could be distinctly perceived by the finger of the observer, placed between the electrodes. Then the hand was carried by the observer from the position of extreme extension to that of extreme flexion, and in this change of posture the electro-muscular contractility was invariably found to diminish, and, if the current were not too strong, to become entirely imperceptible. This effect was reversed by restoring the hand to the position from which it started. I have obtained these results in numerous instances, both with the interrupted galvanic and faradic currents, applied directly to the muscles, and also with the galvanic nerve-muscle current, interrupted; but the faradic current gives a more distinct and positive demonstration than the galvanic, by reason of the more decided muscular contractions which it produces.

The electrodes should be about an inch in diameter. If much larger, they include too great a mass of muscular fibres, and the accuracy of the observation may be interfered with. A distance of four or five inches between them should be maintained, so that the contractions may be easily made out with the finger. The strength of the current should be carefully reduced to the point which has been indicated, because, when powerful currents are used, the variation in the force of the muscular contractions, which is occasioned by the change from a state of relaxation to that of extension, and *vice versa*, is not sufficient to be appreciated by the sense of touch.

Three causes which act in modifying the normal electro-muscular contractility and sensibility[1] have previously been established, the anatomical relation of individual muscles, the quantity and distribution of the sensitive nerves, and the thickness of the skin and adipose tissue. To these must be added the mechanical element of tension.

The experiments upon healthy muscles followed an observation which I recently made upon a case of hemiplegic paralysis, attended with marked muscular atrophy. I was trying to distinguish muscular contraction in response to a mild faradic current, which I was passing through the biceps brachii muscle, and, as I watched closely, without having perceived any signs of it, the patient bent his elbow at a right angle, by carrying his forearm up with his unaffected hand. Immediately the biceps contracted very decidedly to the interruptions of the current. I directed him to let the forearm fall again, and at once the contractions ceased to be apparent. This has been repeated frequently with the same patient, and like results have been obtained in other cases of a similar nature. In two cases of lead-paralysis, the galvanic current has given analogous results in the muscles of the forearm. I may mention here that, if there be extreme atrophy in a case of palsy, the observer may not be able to distinguish by touch or sight these effects of the changes in muscular tension, by reason of the feebleness of the contractions to the electrical stimulus in the attenuated muscles.

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[1] The electro-muscular sensibility is supposed to be included in the foregoing statements.

The therapeutic indications of this method of electrization seem to me to point to many forms of paralysis, and especially to those which present the changes of atrophic degeneration. In lead-paralysis, for example, where the extensor muscles are more affected than the flexors, and the electro-muscular contractility varies in each group with the amount of palsy, the nutrition and growth of the less powerful may be hastened by placing them in the position of complete relaxation during the application of the faradic or the galvanic current. And, generally, where the electro-therapeutist seeks to stimulate muscular growth, and, at the same time, to avoid fatigue and exhaustion in the feeble muscles which he treats, this plan, which takes advantage of position to facilitate the action of electricity, must commend itself.

Art. V.—*Contusion of the Hip.* By Chas. H. Richmond, M. D., Livonia, N. Y.

A tolerably common injury occurring in elderly persons is a contusion of the hip-joint induced by a fall producing a direct blow. As is well known, in a certain proportion of cases of these injuries in which no fracture can be detected, there is excruciating pain, greatly aggravated by the least motion, with loss of power over the movements of the limb. But little swelling usually takes place, but some degree of ecchymosis is apt to follow. These symptoms may continue for an indefinite period—sometimes even during the remainder of life.

The point of inquiry is, *What is the pathological condition giving rise to such a high degree of sensitiveness?* Three or four cases having fallen under the observation of the writer, in which no fracture was detectable, no little perplexity was occasioned in attempting to account for this symptom. Opportunities for *post-mortem* examination seldom occur in recent cases. An examination was obtained, however, in the last case under observation of the injury in question, the case being that of a lady seventy-nine years old, who died of cancer seventy days after the receipt of the injury by fall.

The only lesion discoverable was disease of the round ligament at its cotyloid extremity, it being softened, discolored, and disconnected from the acetabulum. Its femoral extremity was normal, also the cartilages of the joint and other ligaments.

In this case acute inflammation of the ligament was probably induced, which rendered it very sensitive to the slightest movement of the joint. Why the affection occurs only among persons of advanced age, may be explained by the slight degree of elasticity of all the parts connected with the joint in such persons. The loss of power over the limb may be due to the exquisite sensitiveness, at least in part.

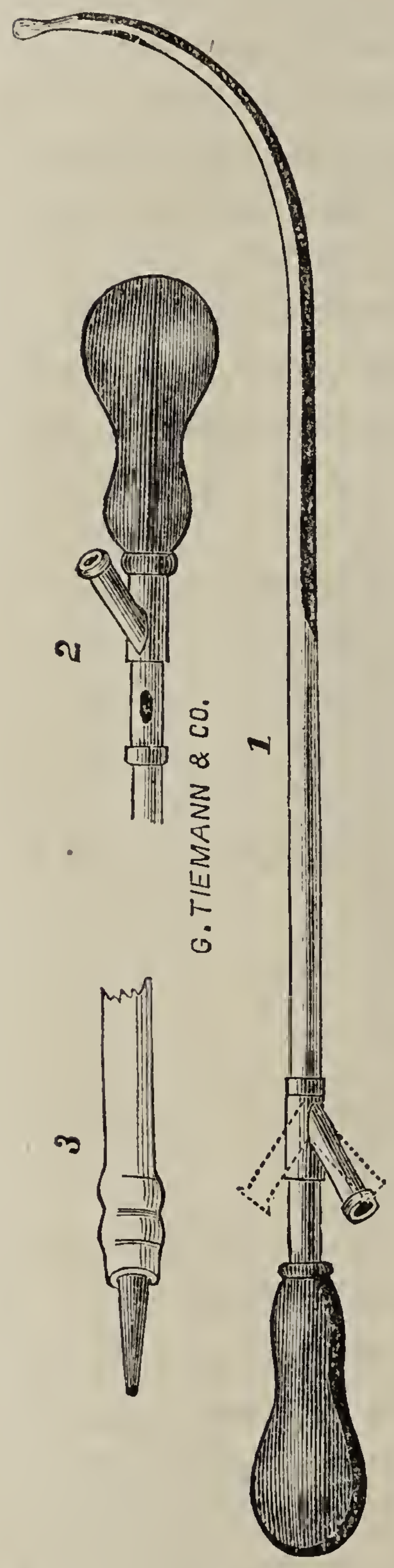
Art. VI.—*Modified Lithotomy-Staff.* By Dr. Lewis D. Mason, Brooklyn, L. I.

The novelty here introduced consists in the combination of a catheter and a grooved staff in the same instrument.

The instrument has the same general appearance as an ordinary grooved staff, with the addition of a fenestra near its beak, on the concavity of its curved extremity, and with a stopcock near its handle for regulating the entrance or exit of fluids (Fig. 1). The staff is canulated, its entire body being hollow, except so much as is required for the gutter or groove.

The canula extends to within half an inch of the handle, the remaining portion of the shaft of the staff is solid, and is inserted into a handle of metal or hard rubber.

The opening for the entrance or exit of fluids into or from the canula of the staff is situated upon its posterior surface, near the handle, at the point where the canula terminates.



A stopcock of simple design (suggested by Mr. Stohlman) regulates the opening, and is so arranged that fluids injected into the canula enter through a short tube, the axis of which is quite oblique to the axis of the canula.

This tube is joined to a short, movable cylinder which ensheaths and turns with ease around the entire circumference of the staff, or can be slid backward upon it, so as to expose, if desired, the opening in the staff. Forward movement is limited by a shoulder set in the staff just in front of the opening leading to the canula (Fig. 2).

The end of the tube is adapted to the opening in the staff when it is turned, so as to look directly backward or in a direction the reverse of that toward which the beak of the instrument points.

When it is desired to close the opening in the staff (to prevent reflux), the tube is turned aside right or left until it lies on the same plane as does the handle of the staff, as illustrated by dotted lines in Fig. 1.

The instrument is made complete by the addition of a flexible-rubber tube six or eight inches long, into one end of which is inserted a hard-rubber nozzle (Fig. 3), of such size as will be readily admitted into the tube, and easily withdrawn when communication between the tube and the canula is closed, and it is not needed.

When it is desired to inject fluid into the bladder, the free end of the rubber tube is drawn over the nozzle of a Davidson's syringe and the object readily effected.

The following advantages result from combining a catheter and staff in the same instrument:

Having the solidity of a sound combined with all the advantages which a catheter possesses, an opportunity is afforded to examine or sound the bladder easily and rapidly under various conditions—viz.: full, partially filled, or empty—without removing the sound; fluid being injected into or drawn off through the canula to fulfil either of these conditions.

Another advantage is the triple capacity in which the instrument may be made to act, as sound, catheter, and staff, *without necessitating its removal from the bladder*, thus saving multiplicity of instruments, abridging the period alotted the operation, avoiding additional irritation of urethra, and preventing loss of fluid from bladder which not uncommonly follows withdrawal of catheter, or occurs subsequently during introduction of staff.

The woodcut represents a No. 8 grooved staff, thus modified, drawn half size. This modification may be applied to staff as low as No. 5.

Clinical Records from Private and Hospital Practice.

I.—*Abscess of the Mastoid Cells; Spontaneous Evacuation, followed by Caries.* By S. Henry Dessau, M. D., one of the Attending Physicians, for Diseases of Children, to the New York Dispensary; Member of the New York County Medical Society, etc.

Having heard Dr. Buck read his able paper on "Diseases of the Mastoid Cells," at the March meeting of the New York County Medical Society, and the highly-interesting remarks following the paper, made by Dr. Noyes, I consider it germane to the subject to report the following case, which came under my service at the New York Dispensary:

The case is interesting in regard to the kind and manner of termination of the abscess, while the plan of treatment for the carious degeneration of the mastoid cells which was adopted in this case was not referred to by either of the before-mentioned gentlemen in their remarks on the subject.

Annie F., aged two years, was brought to my clinic at the

New York Dispensary, August 2, 1871, to be treated for a puriform discharge from the left auditory canal, and from an inflamed opening at the upper portion of the temporal region, behind the auricle. The history that the mother gave was to the effect that an abscess had formed at the upper portion of the mastoid cells, some weeks previous to her presentation at my clinic, accompanied with great pain and deafness, and had opened spontaneously at the point before mentioned, a week or so before I saw her. At the time, there was an offensive discharge of pus, indicative of bone-destruction. The child presented numerous features of the strumous diathesis.

A probe bent to a curve was passed into the opening over the mastoid cells, and made its exit at the meatus, bone being distinctly felt during its passage.

I placed the child upon the use of cod-liver oil, and injected Villate's lotion into the sinus, the injection escaping at the external auditory canal. This injection was repeated every other day, and in the mean time the mother was directed to use an injection of carbolic acid (20 drops to the ounce) twice daily.

I saw the child for several weeks, and then lost sight of it for many months, when I finally had an opportunity of seeing the result of my treatment, by accidentally meeting the child, while inspecting tenement-houses for the Board of Health last summer. The sinus had healed completely, the discharge from the auditory canal had ceased, and the hearing on the affected side was almost perfect. This condition had existed for some time.

The following is the formula for Villate's lotion:

℞. Liq. plumbi subacet., ℥ j.
Cupri sulph.,
Zinci sulph., āā, ʒ iv.
Aceti, ℥ vij.

Dissolve the crystals in the vinegar, and add the lead slowly.

II.—*Successful Case of Ovariotomy, with Remarks.* By William R. Whitehead, M. D., of Denver, Colorado Territory (late of New York).

The following case, operated upon by me while I was still residing in New York, possesses some points of great practical interest, and I believe it worth recording:

Case.—Miss W., aged nineteen years, of Gates County, North Carolina, consulted me last spring in New York, accompanied by her family physician, Dr. John Goodman, of Nansemond County, Virginia. A careful examination revealed the presence of a large ovarian cyst, causing the patient to be as large as a pregnant woman at full term. The uterus was readily distinguished from the cyst, both by the aid of a manual examination and of the uterine probe. The cyst was diagnosed to be unilocular. At the request of the young lady, I went to North Carolina, and excised it at her residence. The operation was done on the 14th of March, 1872, in the presence of, and assisted by, the following gentlemen: Dr. Goodman, who etherized her; Dr. P. B. Baker, of Suffolk, Va.; J. B. Whitehead, of Norfolk, Va.; and Drs. Henry A. Morgan, Elisha Williams, and Henry Riddick, of Gates County, North Carolina.

The abdominal incision was only three inches in extent. The sac was punctured with Thomas's trocar, and between fifteen and sixteen quarts of clear lemon-colored liquid drawn off. I attempted to secure the pedicle with silver wire, but found it to be so broad and short, that after I had tied about half of it, I abandoned the silver wire, and applied a stout double-silk ligature after Tyler Smith's method. The pedicle was cut, and the stump dropped into the abdominal cavity, the ends of the silk ligature having been cut off quite short. The silver wire, which had already been used to secure a part of the pedicle, could not be extracted without much delay, and was not removed. Each piece of the silver wire used on the pedicle was tied tightly once, and then twisted. The abdominal cavity having been thoroughly sponged out, the peritoneal and external incisions were closed with silver-wire sutures. A light dressing, and an abdominal binder, were adjusted snugly to the patient. She reacted well, and ten drops of Magendie's solution of sulphate of morphia were injected under the skin. The sac and liquid weighed thirty pounds. The sac contained in its walls two or three small cysts, which were withdrawn with it through the abdominal cut, without having been punctured.

March 15*th.*—Catamenia appeared twenty-four hours after the operation.

March 16*th.*—Pulse at two o'clock P. M. 108 to 112. Condition very favorable. Sulphate of morphia one-eighth to one-fourth of a grain in solution every three or four hours, and alternating with an occasional injection of about eight drops of Magendie's solution of morphia.

March 19*th.*—There was a rise of fever toward evening, with initial symptoms of septicæmia—such as slight rigors, followed by a feeling of internal heat; dry and harsh skin, excessive dryness of the mouth, and a feeling of oppression. I believe these symptoms to be usually present in the earlier stages of the blood-poisoning of septicæmia. It is necessary for the surgeon to be vigilant, and alert to suspect and detect promptly the sudden yet insidious approach of this disease. I knew that Tyler Smith's method of managing the pedicle was attended with success in many cases; but it is the source of septicæmia. It is the ligature of the pedicle with a string, and leaving a part at least of that string, although a silk ligature and cut off short, in the cavity of the belly and without escape except at the risk of local suppuration, and of the formation subsequently of pyemic abscesses in the viscera and joints. The initial period of these formidable complications is recognized by the peculiar symptoms of blood-poisoning, to which I have alluded, whether they occur after ovariotomy, or after any other surgical operation, or after an injury. These considerations induced me to give promptly to the patient sulphate of quinia in large and repeated doses. She took the first day forty grains, followed by a marked improvement.

March 20*th.*—She took thirty grains of quinine during the day. Toward evening pulse 92 to 96.

March 21*st.*—At 3 P. M. the patient was extremely restless. A bed-pan was placed under her, and I washed out the vagina three or four times with tepid water by means of a Davidson's syringe. She became quiet and rested well. The sulphate of morphia was injected hypodermically as required. Sometimes ten drops, and occasionally as much as fifteen drops, of Magendie's solution, was administered in this manner. She vomited frequently after the operation, and with difficulty retained any nourishment. She, however, drank rather freely of some country wine. I remained with her at her residence without the assistance of trained or experienced nurses, and far removed from a drug-store. I fortunately succeeded in making a nutritive food, which was prepared from the lean of chicken boiled in small quantities of a peculiarly high flavored Southern wine called the "Scuppernong" wine. Although the patient would not take any nourishment such as sherry-whey or chicken-soup, she readily took the wine prepared as described without knowing that it was so prepared.

March 22d.—A mixture containing carbolic acid, glycerine and chlorate of potash, was given, which greatly relieved an excessive dryness of the mouth. Her tongue was red and smooth, and her stomach irritable from excessive vomiting. Pulse 100 to 104, and slightly increased at night. During my absence a solution of morphia was directed to be given in place of the hypodermic injections. This solution was repeated too frequently, and she became deeply narcotized. An hypodermic injection of one-fiftieth of a grain of sulphate of atropia, together with a few teaspoonfuls of very strong coffee, which she swallowed, very soon dissipated the toxic effects of the morphine.

March 23d.—The abdominal cut suppurated at its lower edge. Pulse averaged 104. Sulphate of quinia repeated: fifteen grains given during the afternoon and at one dose. The continued use of large doses of morphia hypodermically seemed to be an urgent necessity, and ten and sometimes fifteen drops of Magendie's solution of morphia were given every five or six hours. The patient complained much of pain, which she frequently referred to the abdomen, but which was really occasioned by a bed-sore over the sacrum. However, the exaggerated complaints of the patient induced me to give the morphia oftener than required, until, by a most careful examination of the abdomen, I found that there was no pain on pressure sufficient to explain her suffering. But she was frightened, and exceeding fearful at times that she was going to die. A few encouraging assurances reëstablished her courage.

March 25th.—I took out all the sutures in the abdominal wound.

March 26th.—Her bowels were moved copiously twice. Pulse still continues 96 to 104.

March 27th.—Bowels moved copiously two or three times.

March 28th.—Tongue red and moist. Pulse 92 to 100. I left her in the care of the family physician, Dr. Goodman, and returned to New York.

The patient recovered slowly, and it was not until six weeks after the operation that she was able, under the attentive care of Dr. Goodman, to sit up in a chair. At that time the doctor wrote to me that her appetite was good, and that she was in good spirits. Subsequently she entirely recovered.

This case presents some points which are especially worthy of notice. In my opinion, the alarming symptoms which occurred during the after-treatment were due to the presence of the silk ligature, and also to the constricting pressure of the silver sutures which were used to secure a part of the pedicle, and which were not removed. Six or eight days after the operation, I thought of making, with a pair of long and sharp-pointed curved scissors, a counter-opening through the Douglas *cul-de-sac;* and I regretted afterward that I did not make this counter-opening.

I do not think that I should again use the silk ligature, and, if I use silver wire with which to secure the pedicle, the following manner of adjusting the wire I believe to be the most effectual way to avoid sloughing of the stump: Thread a straight needle with two pieces of silver wire as seen at *a*, Fig. 1; pass them through the pedicle half an inch or more from its border. The external wire forms a suture which is twisted over the border of the pedicle, and this suture is twisted enough to constrict the part so as to *stop any bleeding, but not enough to destoy its vitality.* If Sims's wire adjuster and forceps only are used to twist the wire, and the wire is not tied or constricted forcibly before it is twisted, there will be constriction enough to stop bleeding as effectually as acupressure would, and yet the capillary circulation of the constricted part will not be interrupted so as to destroy its vitality. Next thread a needle with another wire and the proximal end of the internal wire of the first two, and pass them through the pedicle at *e*, Fig. 2. A similar manœuvre is repeated until a sufficient number of loops has been made, so as to embrace with separate ligatures the whole width of the pedicle. Each suture should be then twisted tightly with a wire adjuster and forceps; but without previous *forcible* constriction, and the wire turned down and cut off short, and the stump of the pedicle dropped back into the abdominal cavity. I believe that much of Sims's remarkable success in this operation is due to the fact that the pedicle is not constricted by the silver wire so as to destroy its vitality, but just enough to prevent bleeding. Silver wire is the least irritating material that can be used for sutures, yet, in the approximation of wounds by means of silver wire, if there be undue constriction, there will often be as much ulceration of the tissues as with silk sutures, which circumstance has sometimes led distinguished surgeons inconsiderately to prefer silk to silver sutures in cases in which the latter are decidedly to be preferred. There is no operation in which greater constriction of the tissues can be permitted with immunity from ulceration than in the closure of cleft of

FIG. 1.

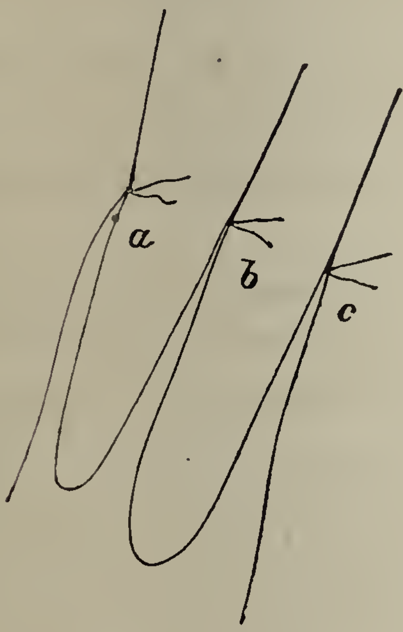
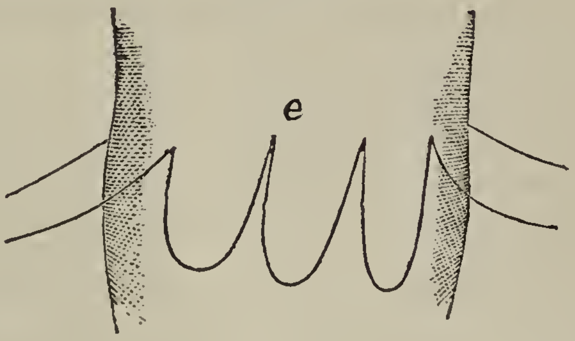


FIG. 2.



the hard and soft palate; yet in this operation I have sometimes had the silver sutures to ulcerate, and I always use these sutures in this operation, and have found it necessary on the third or fourth day to cut them to relieve the constriction and stop the ulceration which is liable to endanger the union of the parts.

The success of Beebe, of Chicago, in five cases in which he used torsion on the arteries of the pedicle, has deeply interested me, and is well worth the attentive consideration of surgeons who perform ovariotomy.

The after-treatment is so important in this operation, that I believe that failure will nearly always follow the injudicious management of the case. If it escape peritonitis, it may run the risk of too profound narcotism, caused by the use of too much opium from fear of peritoneal inflammation; and it would certainly be extremely hazardous to attempt the after-treatment without the aid of opium or one of its preparations. Those surgeons who go long distances to operate, and leave their cases, a few hours after the operation, to the care of others, can never expect to obtain those satisfactory results which would probably attend their immediate and personal supervision of their cases. It may be that hæmorrhage will occur within twenty-four hours; the woman suddenly has collapse; the abdomen is found to be much enlarged, and the urgent necessity of the case requires the attendant to reopen the abdominal wound, remove the blood, and secure the pedicle again. Such responsibility thrown suddenly on the family physician, who seeks the advice and aid of the ovariotomist, may prove extremely embarrassing, and may cause fatal delay. It may be that, at some time during the after-treatment, it will be necessary to reopen the abdominal wound, or make a counter-opening, in order to wash out the abdominal cavity with disinfectant washes, to rid it of dangerous collections of pus.

III.—*Tracheotomy in a Case of Membranous Croup; Recovery.* By Nathaniel B. Emerson, M. D., New York.

I offer the following account of a case of tracheotomy, for the relief of membranous croup, in the hope that the success obtained may not be without its influence in encouraging physicians to resort more boldly to an operation the usefulness of which might be extended.

The patient, named Thomas M., was of Irish parentage, two years and seven months old, a robust boy of excellent constitution, healthy up to the time of the attack for which I was called. When first seen, November 5, 1872, the child had been suffering, for two days, with hoarseness and a croupy cough, and presented the following symptoms: respirations between 35 and 40 per minute; breathing difficult, both in expiration and inspiration; voice reduced to a hoarse whisper; pulse between 120 and 125 per minute; face slightly flushed; strength good; temperature not taken with the thermometer. The whitish membrane of croup covered the tonsils, and extended back into the pharynx. Mucous *râles* were heard in the lungs. Two grains of quinine, alternating with four grains of chlorate of potash, every two hours, were administered. I also ordered the application of ice to the throat, instead of goose-grease and snuff, with which I had found this part plentifully besmeared. At the same time directions were given to keep the air of the room charged as much as possible with steam. The application of ice to the throat caused a marked increase of the dyspnœa, and made the child "get blue in the face," the mother said. Fomentations of hot water were therefore substituted for the ice.

At four o'clock the next morning, I was called in haste to see Thomas, who had spent a poor night. I found him tossing impatiently about, laboring to fill and to empty his lungs. Respirations were about 60 per minute; pulse about 160, of unequal frequency in expiration and inspiration; face flushed.

The membrane in the throat presented the same appearance as on the previous day.

Not willing to waste time in the trial of inefficient remedies, I proposed to the parents the performance of tracheotomy, and, with their consent, this was done as soon as the assistance of a neighboring physician could be obtained.

To my subsequent regret, the operation was undertaken without an anæsthetic, and thus, to the embarrassment caused by the feeble light of candles and kerosene-lamps, was added that from the ill-restrained motions of the struggling boy. The little fellow was laid on his back on a firm table, and held securely, facing myself, with his head thrown back, and his chest and neck elevated by a pillow under his shoulders. An incision about an inch and a third in length was made from a little below the cricoid cartilage downward, dividing the integument and superficial fascia. The tissues were remarkably vascular, and the flow of blood from the engorged veins was so profuse as greatly to prolong the operation, and to require the application of no less than three ligatures. Two of these were applied to a considerable venous branch that crossed the trachea obliquely just in the middle of the incision. The vein was then divided between the ligatures.

Having laid bare the trachea, I endeavored to retain it in position with the fingers of one hand, while I penetrated it with my scalpel, cutting toward the chin. This I found to be an operation of no little difficulty, owing to its convulsive to-and-fro motion in respiration, as well as the unusual shortness of the boy's neck.

This accomplished, I introduced a director, and slit up several rings of the trachea with a blunt-pointed bistoury. Disregarding the hæmorrhage, which was considerable, by dilating the wound with the blades of an ordinary forceps, I was able with some difficulty to introduce the trachea-tube. Air entered readily, and at the very first expiration there was blown out through the tube a quantity of mucus and blood that had entered in the last moments of the operation.

After the introduction of the tube, respiration was not instantly established with regularity, and the radial pulse was for a short time quite imperceptible. But, after gasping a few seconds, and blowing through the tube considerable blood, respiration was established and went on perfectly. A few spoonfuls of brandy-and-water were administered, and revived the boy still further. From the moment that respiration became regular, no trouble was experienced from hæmorrhage.

The trachea-tube used was the usual double tube, of silver, the outer one of which is fenestrated. The diameter of the outer tube was nine millimetres, that of the calibre of the inner tube seven millimetres. This size of tube was used throughout the treatment, save during a day or two, when a size smaller was tried. But the smaller tube evidently admitted an insufficiency of air, and proved unsatisfactory, and the larger one was resumed.

The immediate effect of the operation was to entirely relieve the dyspnœa and other distressing symptoms. During the day of the operation, the respirations numbered about 30 per minute; pulse still frequent, about 150, evidently increased by fear of the doctor; countenance pale. Strict attention was paid to keeping the tube free, and the parents removed and cleaned the inner tube every half-hour. The air of the room was still kept moist, and every four hours was administered a mixture, of which each dose contained a grain and a half of the bisulphate of quinine, and of bicarbonate of ammonia, and ten minims of the syrup of senega.

November 9th.—Pulse 135; respiration 35; slight dulness on percussion, and bronchial respiration at the apex of the right lung posteriorly; mucous *râles* scattered at intervals through the lungs.

November 11th.—Pulse 125; respiration 30; still some mucous *râles* in the lungs; dulness over the apex of right lung; appetite good; strength improving; abundant discharge through the tube; bicarbonate of ammonia omitted.

November 14th.—Patient still improving; respiration 30; pulse 114; dulness of the lung decreasing.

November 15th.—Watched my patient for about twenty minutes at ten o'clock in the evening, while he was asleep. Pulse 98; respirations 29. He coughed but once while I watched him.

November 18th.—Pulse 104; respiration 34. Patient is bright and cheerful, save when his throat is being attended to. There is considerable discharge from the wound, and through the tube, of mucus, mixed with pus and blood.

For two or three days the entire removal and replacement of the tubes has been interfered with by granulations that limit the size of the wound, and bleed each time the outer tube is pushed into place. Some of the granulations within hang down in the form of a valve, and, entering the fenestra, cause by their intrusion a fresh bleeding each time the inner tube is replaced.

At my invitation, my friend Dr. Jacobi saw the patient with me to-day. The tubes being removed, the valve-like mass which protruded from the wound on expiration, and was found to be composed of true membrane of croup mingled with mucous membrane, was seized with a forceps and torn out, and the tube was returned. After this simple operation, the removal and reinsertion of the tube caused but little bleeding.

On the 19th, after removing the tube, I cauterized the wound thoroughly with the solid nitrate of silver, using for this purpose a probe armed at its blunt end with a crust of this salt. I then neutralized the part with a solution of chloride of sodium, introducing the camel's-hair brush or swab quite into the trachea, and returned the tube. This operation, which was performed almost daily until the final removal of the tube, caused violent coughing and generally vomiting. I was therefore careful to perform it at a time when the stomach was nearly empty.

November 20th.—When the inner tube is removed, and the outer tube is for a moment plugged externally with a cork or one's finger, Thomas can whisper and pronounce words in a hoarse tone, the first words uttered since the operation, fourteen days ago. From this date, the parents were instructed to partially close the outer tube externally with a cork for a short time each day. The size of this plug was increased gradually from time to time, until in a few days it completely filled the tube, thus causing the patient to breathe more and more through the glottis.

But it was noticed that, even for days after the patient could breathe well, while the plugged tube was in position, he would be seized with violent dyspnœa whenever the tube was taken out; and this, in spite of the fact that no air apparently passed in or out of the wound while the closed tube was in. There soon came improvement in this respect, however, and he could get along quite well for several hours without the tube. But, even after this point had been gained, I still thought it prudent for the tube to be kept in during each night.

December 25th.—Twenty-nine days after the performance of tracheotomy, I removed the tube from the throat, cauterized as usual, and allowed it to remain all day and night. The little fellow got along well without it, and after this it was not found necessary to return to its use. The edges of the wound soon came together, and, in thirty-six hours, had so closely united that there seemed hardly room for the admission of a probe-point. The healing and cicatrization of the external wound were completed in a few days.

When last seen, December 28, 1872, the voice was still somewhat hoarse, and at night he breathed huskily, but this was gradually passing away.

The after-treatment, in which lies the burden of successful tracheotomy, is liable to make such demands on time and patience, that we do not wonder that this operation is not a favorite one with the busy practitioner.

IV.—*A Case of Abscesses of Right Broad Ligament and Surrounding Cellular Tissue.* By J. E. Janvrin, M. D., New York.

In the autumn of 1869 I was called to see Mrs. M. N., aged twenty-five, married, and the mother of two children, the oldest five, and the youngest one year old.

The patient had noticed a swelling in the right iliac region some two weeks previously, and had suffered somewhat from pain and tenderness upon pressure. During the day previous to my visit she had had quite a severe chill, and another on the morning of the day of my visit.

In the examination of the case, I learned that during her last confinement, about a year previously, she had suffered from "inflammation of the bowels," as stated by her attending physician, and had been confined to her bed fully one month after the birth of her child. The principal part of the pain at that time was located in the right iliac region.

On examining *per vaginam*, I found the uterus retroverted and bending somewhat to the left side, very heavy and sensitive, and firmly fixed in its position by old adhesions, undoubtedly the result of peri-uterine cellulitis of the previous year. To the right of the uterus, and extending well up in the pelvic cavity, and involving the broad ligament and the surrounding cellular tissue, I found a fluctuating tumor, painful upon pressure, and apparently enveloped in a sac. From the history of the case, and the examination made, I came to the conclusion that it was an abscess. Her menstruation had been quite regular for the previous seven months, the child having been brought up on the bottle. My instructions were, to keep perfectly quiet in bed, to use warm-water injections freely in the vagina twice daily, to take light but nourishing diet; and I also gave large doses of quinine. On the third day subsequently, I was gratified to learn that the abscess had discharged *per vaginam;* some two or three pints of pus escaped during that and the subsequent day.

Rest in bed for some two weeks, blisters externally, and a general tonic treatment, seemed to have about completed the cure, the only trouble at this time being the retroversion and the extreme tenderness of the uterus. This was treated by scarifications and the use of a ring-pessary, and the patient was allowed to go about the house at the expiration of the third week. Occasional scarifications and the continued use of the pessary and warm-water injections soon relieved the congested condition of the uterus, though the retroversion continued to a great extent on account of the strong bands of adhesion about the organ.

Some ten weeks subsequently, the abscess filled and discharged *per vaginam* again, the amount discharged being somewhat less than at the previous evacuation.

It continued to fill and discharge about every three months until June last, each time emptying itself *per vaginam*, excepting in September, 1871, and in June last. On each of these latter occasions it discharged by the bowels. On the first of these latter dates, the abscess had attained to a much larger size than at any previous time, and had extended well up toward the liver. There were severe chills daily for some two weeks previous to its rupture, alternating with high fever. My impression is, that the discharge at this time took place into the duodenum, as quite an amount of pus was vomited, and within a few hours a large amount—probably some three quarts—was passed *per rectum.*

During none of these discharges were there the least evidences of peritonitis, until that occurring in June last. At this date (June, 1872) the abscess had attained an immense size, extending high up under the lower border of the liver and across the abdominal cavity some three inches to the left of the median line.

The pressure upon the diaphragm was such as to interfere considerably with the respiration, and the general health was quite seriously affected. On the 10th of the month, after some two weeks of suffering from chills, fever, and great prostration, the contents of the sac were discharged, probably into the duodenum, and about a quart of pus vomited, followed by five or six large evacuations *per rectum*, the amount discharged that day *per rectum* being at least a gallon.

During the day symptoms of peritonitis occurred, confined to the region of the lower border of the liver, and not covering a space of more than six inches in diameter. Full doses of morphine were given, and the pain was soon subdued. During the following two days the amount of pus discharged was at least another gallon. On the third day I gave a dose of castor-oil, which acted freely and brought away both fæces and pus. Morphine and quinine had been given in combination to control the pain and peritonitis, and to support the patient. On the fourth, fifth, and sixth days, there were still small evacuations of pus, but on the seventh they ceased. The peritonitis had subsided and she was convalescing. The tumor had almost entirely disappeared, and at the present date her recovery seems to be complete, her health being very good, all enlargement of the right side entirely gone, no tenderness upon pressure, and every thing apparently in a perfectly normal condition, with the exception of a slight thickening in the region of the right broad ligament and the fixed retroverted condition of the uterus.

The chief points of interest in the case are:

1. The length of time which elapsed between the attack of peri-uterine inflammation and the first appearance of the abscess. I could trace the abscesses to no other source than that inflammation, and that had taken place fully one year previously.

2. The frequency of the filling up and discharging of the sac (ten times within thirty months).

3. The large amount of pus secreted and evacuated during that time, and the patient still continuing in very fair health the most of the time.

At the present date, four months after its last and most profuse evacuation, the patient is in far better health than at any time during the past four years, and I think there is every reason to hope that the walls of the sac have become firmly agglutinated, and that there will be no more accumulation of pus.

V.—*Case of Pudendal Lipoma; Operation. New York State Woman's Hospital.* Service of Prof. T. G. Thomas. James B. Hunter, M. D., Assistant-Surgeon. Reported by W. Gill Wylie, M. D., House-Surgeon.

Mrs. D., admitted February 6, 1872; widow, aged thirty-three years; married at fifteen. Has two healthy children living, the younger nine years old. Eight years ago, while again pregnant, she had a chancre. She subsequently gave birth to twins, which lived only three months. Soon after confinement she noticed a small lump in the left labium. At first it gave no trouble, but it continued to grow until it occasioned much inconvenience by its weight, and interfered with walking. She is also suffering from syphilitic ozæna, sore-throat, and general debility. Examination reveals a tumor occupying the position of the left labium, about the size of a small orange, oblong in shape, smooth, and very elastic. Fluctuation not perceptible. The hypodermic syringe fails to draw fluid.

February 15*th.*—Dr. Thomas made a superficial incision along the mucous membrane of the left labium, and found the tumor enclosed in a firm fibrous sac. It was readily detached with the fingers and the end of the scalpel, except at one point, where it had a small but very firm attachment to the periosteum of the pubic bone, posteriorly and a little to the left of the median line.

The vulvo-vaginal gland lay just behind the tumor, and was exposed to view during its removal. Very little blood was lost. The edges of the wound were united with silver sutures, except at the lower angle, where an opening was left for drainage, and a tent of cotton introduced.

February 16*th.*—The patient is weak, but otherwise doing well. Wound swollen and painful, the tissues being œdematous. Morphine is given for the pain, and the wound syringed with a weak solution of carbolic acid.

February 30*th.*—Wound healed by first intention, except at the lower angle.

March 10*th.*—Wound entirely healed. General health much improved. Patient discharged cured.

VI.—*Rupture of the Œsophagus.* By James S. Bailey, M. D., Albany, N. Y.

When practising in the rural districts of Alabama, I was called to attend the body-servant of a gentleman, a stout, likely boy aged twenty-two.

He was seized with a violent fit of vomiting, followed with severe pain in the region of the stomach. The first matter ejected was the contents of the stomach, and afterward frothy mucus. For twelve hours before death I was surprised to find that, in every effort to vomit, nothing was ejected, and, although he had taken full doses of castor-oil, his bowels did not respond to its action.

I saw him in the early part of the attack, and the case gave me great anxiety, as it occurred during the first year of my practice, and I felt that my future business depended much upon my success in the treatment of this case.

Although I availed myself of the counsels of abler physicians and men of acknowleged reputation, yet my patient died in twenty-four hours from the time I first saw him.

A *post mortem* was held twelve hours after death. Every organ was found healthy; but in the cavity of the chest were found the castor-oil and fluids swallowed. This led me to suspect a rupture of the œsophagus, which by careful dissection we found extending a half or three-quarters of an inch in length, an inch above the cardiac orifice of the stomach, through which the fluids swallowed had passed into the mediastinum. The negro had apparently enjoyed excellent health previous to the attack.

The rarity of this lesion, occurring when the tissues were seemingly in a healthy condition, has induced me to publish this case.

Oppolzer reports only one case of rupture of a sound œsophagus. Usually in cases of rupture of the œsophagus it has occurred at ulcerated points.

Correspondence.

VIENNA, *March* 3, 1873.

ONE hears at home a good deal nowadays about its being nonsense to come abroad to study, as the opportunities are just as good in New York, and that it is a mere waste of money and time. The question of money is one which every man must settle for himself, but, as to the comparative advantages, there can be no doubt of the superiority of those here, I think.

Imagine taking hospitals the size of Charity, Bellevue, and St. Luke's, filling them with cases of all sorts (except those of infants and children), and setting them down on one piece of land, and some idea of the greatness of the "Allgemeine Krankenhaus" may be obtained.

The hospital buildings are ranged round the four sides of nine large courts. The courts are connected by archways through the buildings, contain on the average about half an acre of land, and are filled with grass, trees, and flowers. The buildings are two stories high, and long and narrow. The wards run the length of these buildings. The windows are very numerous in the wards on each side, quite high above the beds, and, together with large ventilators, cut in the walls, afford most excellent ventilation. The heating arrangements are pretty bad, but fortunately little used. Food is principally soup, "Rindfleisch," bread and pudding (of which the Viennese are excessively fond), of a good quality. The nurses in all wards, male and female, almost without exception are women. The whole state of morals here is very different from that at home, but from this point of view these nurses are fully equal to ours, and in point of efficiency and reliableness far superior. With a salary of four and a half dollars monthly, they are much better than one would expect. All the patients wear a costume consisting of red-striped shirt and drawers, blue-and-white-striped dressing-gown ("Schlafrock), and slippers. Through the whole winter patients have travelled around the yard with no hats or stockings on, nothing but the above costume, and without apparent bad effects. The wards surpass ours in regard to cleanliness. The beds are tolerably free from bed-bugs ("Wanzen"), the linen white, and the floors always well scrubbed.

Most of the lectures are either given in the wards or adjoining rooms by the university professors, or in a few cases by *docents*. The elementary branches, anatomy, physiology, and chemistry, are taught in a set of old buildings about five minutes' walk from the hospital.

The university courses in the hospital are given through a whole *semestre*, five times in the week, and cost from one dollar and a half to five dollars. These courses are all good, as they are purely practical, only clinics, in fact; but it is hard to get a good seat to see, from the large number of students.

The lecture part is very unsystematical, partly owing to the material that turns up, and partly owing to the necessity of spinning it out through the whole *semestre*. On these accounts, it is hardly worth the while of an American, who comes here for only a winter, to spend much time at these courses, but is better to take a private course of an assistant, which, as a rule, lasts only six weeks. The assistants are usually able men, who live in the hospital for several years. The service of the first assistant lasts eight years. He must take any responsibility, be ready to lecture in the professor's absence, perform any operation—in fact, has practically entire charge of the wards. It is easy to understand that such a man has unlimited opportunities to give a thorough practical course of lectures to a small number of men. It makes little difference, in some branches, whether these assistants have much fluency in lecturing, as what is wanted is a clear view and handling of disease. These private courses of six weeks and two months have grown more and more popular as the number of American medical students has increased, and now there are from three to four courses given in each branch throughout the entire year. It is only a matter of getting a certain number of students and guldens together. An ordinary six weeks' course costs from seven to ten dollars. Courses in skin-diseases, and percussion and auscultation, are the cheapest, only costing five dollars, and lasting two to three months. Attached to the university is a small number of *docents*, who have served in the hospital, and been appointed as hospital lecturers. They usually have a service in the out-patient department, and give private courses similar to those of the assistants.

It is hard to say which subject can be learned to the greatest advantage. To begin with, I will tell how one learns midwifery, even at the risk of its being an old story: Prof. Carl Braun is at the head, and gives a two hours' course every afternoon through the *semestre.* He takes up any and every subject that occurs to him, or is suggested by cases. Almost every day patients are brought in to be examined, delivered, or operated upon. They are mounted on the table before the sturdy professor, and, after their history is elicited, the examination, externally and internally, made in sight of all the students, and treatment decided upon. If forceps, little time is lost, but as soon as possible they are applied, each step being carefully described. There is no false modesty as to covering a patient up, throwing a reflection on a screen, or what not, but every thing is in plain view. In Prof. Braun's ward there is an average of about fourteen births daily, and every thing of interest is kept for the afternoon clinic. In this way during the present *semestre*, which began early in October and will end in a week, there have been *at least* a dozen forceps-cases, four craniotomies, several turnings, breech-presentations (natural birth), to say nothing of abortions, operations for cancer of neck, polypi, vesico-vaginal fistulæ, tapping ovarian cysts, etc., seen in the lecture-room. Besides these cases, numerous gynæcological cases are produced, and sometimes examined by students, who are put through a thorough quiz. When there are no cases at all, and nothing particular to say, the professor has his plates or instruments brought in, and the point is to keep going as long as possible. It is interesting to see the short, fat professor, on such occasions, move his chair just near enough the black-board to draw, and near enough the table to tap now and then with his sound on the plates. He squirms around on his chair, and lets his legs hang over the arm, and there he sits and tells stories, and "talks and talks."

He has the habit of saying "Meine Herren" very often; in less than an hour and a half a friend of mine actually counted one hundred and thirteen times! There get to be so many of these *dry* days after a while, that three-fourths of the students by the last month in the *semsetre* fall off. As the whole course costs only five dollars, one usually gets his money's worth. Taking out this ticket entitles the bearer to the lying-in-wards to practise. That means to have your name written down on the weekly list, pass one night during the week in the ward, examine all cases as often as you please, and, if you have had an operative midwifery course, to put on the forceps *if chance favors* you. In addition to the weekly list is a so-called "reserved list," which enables you to take a substitute's place, and in this manner to be oftener in the ward. Some nights there may be only three births, others twenty. One has an opportunity to watch normal cases, and by frequent visits to wards can, of course, gain much valuable experience. As for operating, it is limited, except in rare cases, to putting on the forceps where the head is in the vagina, and assisting a breech-presentation. I don't know a case where any student has done more than this during the present winter. When you take an average of two-forceps cases weekly, operating does not amount to much, under these circumstances. There are two cases I know of where two gentlemen passed most of their time for three months in the lying-in wards. During the time one had eight and the other nine forceps-cases, and perhaps six breech-presentations apiece. To sit up all night on the hope of a forceps-case requires an unusually good digestion, to say the least. Much attention is paid here to the external examination as an aid to diagnosis. There are two ways of learning this, viz., by attending the visit four times weekly for the admittance of patients, or by taking a so-called "touching course" of Dr. Bandl, Prof. Braun's first-assistant. In either of these courses one examines every case under the eye of the assistant, both externally and *per vaginam*, and is obliged to make a thorough diagnosis. The former has the disadvantage of being open to all students, and consequently very crowded. The latter is limited to three students, and lasts a month. In this time one acquires a very good knowledge of diagnosis in the last month of pregnancy. Perhaps the most beneficial of all obstetrical instruction is the practical-operation courses. There are four such courses given, two by Bandl and Chiari, Braun's assistants, and two by Drs. Meyerhofer and Rokitansky, Jr., both *docents*, and formerly assistants of Prof. Braun.

These courses begin with a *résumé* of the various positions and mechanism of each one, and when this is understood the forceps are at once begun with. The operations are performed on the cadaver with a dead child. The material is abundant, the teachers excellent, and the result is that, at the end of a month, you have applied the forceps in all possible positions, by this means acquiring a familiarity with the forceps and thorough knowledge of mechanism, have performed craniotomy and decapitation, have turned in all positions, and been generally practised in diagnoses of all presentations. To an American student who has always had an idea that midwifery was about as hard as any thing could be to learn, and has never had an opportunity to look at the subject practically, it is reducing a bugbear to a simple household matter, to take such a course.

The amount of it is, the chances are good here to study midwifery, and the more capacity one has to flatter the midwives, and be indifferent to want of sleep and the groans of the being-delivered, and the cries of the new-born, why, so much more experience can be obtained.

I think there have been four Cæsarean sections here during the winter, two occurring on one day. In the most successful case the child lived four hours after delivery. The Austrian law requires Cæsarean section to be performed in any case where a pregnant woman dies with a uterus reaching as high as the umbilicus, which gives quite a large number of Cæsarean sections yearly.

Gynæcology cannot be studied to much advantage, strange to say. There are three courses given: One is in the out-patient department of the hospital two times weekly, is very good, but little material; the second is by Rokitansky, Jr., in the city dispensary. Here the material is also scarce, and lectures not very systematic. The third course is by Dr. Funk, and embraces what material is found in the hospital wards. In so far as making two or three original examinations daily, and diagnosing whatever may turn up in the way of possible pregnancies, tumors of the uterus, various versions and flexions, and passing catheter, uterine sound, speculum, etc., it is good, and would be hard to get elsewhere. It is only that one can get but limited ideas of pathology or therapeutics in such a course, and consequently no thorough knowledge. With so much material as there certainly is, if it were rightly used, and so many specialists, one is disappointed at the slipshod manner in which this branch is taught. Prof. Braun undoubtedly is Professor of Midwifery and Gynæcology, but, even by a six months' attendance on him, little more than a superficial idea can be obtained.

I suppose the fact is, New York leads in women's diseases and uterine surgery, but they don't like to confess it here. Prof. Thomas's book is one of the standard authorities here, which may be considered a significant sign of the times.

Of all branches of medicine, there is none more pleasant to study here than skin-diseases. Hebra, who has certainly been a second father to the cause, has as usual held his two hours' daily clinic throughout the entire *semestre.* It is impossible to get tired of hearing him, as he is always bright, fresh, and witty. What he says can be relied on, for it is the result of long years of constant, penetrating observation. He likes to go behind the scenes, pull a thing to pieces, and reduce it to its simplest terms in broad daylight. Any theories, any possibilities, are not sufficient for him—threadbare facts only are of worth in his opinion.

He gets to the hospital about eight o'clock, and, after seeing a few of the worst cases in bed, gets to his lecture-room, which is large and pleasant. In the middle is a high turn-stool, with a back and couple of steps. The rule is for *every* male patient to come in without clothing; women are stripped if necessary. Hebra says you never ought to make a diagnosis without seeing the whole body.

If a patient does not get in the moment his name is called, mount on the turn-stool, and stand up straight, the professor will go up to him and say some such thing as "Have you got any legs or not? why don't you use them?" He first examines the fingers, to see if there are itch-insects or not. His next move is to examine the calluses on the patient's hand, to see what his business is. He has got the thing so refined that he can diagnosticate tailors and shoemakers, and waiters and porters, etc., with unfailing accuracy. He then points out the disease, says more or less about it, and orders treatment, interlarding his whole conversation with witty and philosophical remarks. He also never neglects giving the students much sound advice, as it occurs to him. One sees, on the average, about thirty patients every morning at his clinic; some are out-patients, but the largest number in-patients. If I had not already written more than I intended to, I should like to send you some of his acute and humorous remarks, but you are already acquainted with him, and more is not necessary. Immediately after Hebra, Dr. Neumann gives an hour's lecture. He is well known at home through his book on skin-diseases, a new edition of which has just appeared. His lectures are justly very popular. He diagnosticates every disease by a careful differential diagnosis, never jumps at a conclusion, but slowly and deliberately arrives at it. His course lasts nearly three months, and during this time almost every skin-disease is taken up, and, from his large experience and particularly extensive microscopical researches, it is doubtful if it could be improved. Students usually begin the study of skin-disease with him, as he is so much more methodical and elementary than the others. He strikes one almost as an American, from the clear business way he has of stating things. Two-thirds of his hearers are Americans. Hebra said one day it was a remarkable (not to say lamentable) fact that German students paid so little attention to skin-diseases. Out of four thousand students he had had, only one thousand were not foreigners. This year, from the largely-increased prices of living, probably there are not more than fifty students at Hebra's, whereas last year there were over one hundred. Among Neumann's students are three American women. During the last course Neumann asked us if we should object to having these women present. He said he himself didn't believe in their studying medicine, but still hardly wanted to be too one-sided, and would leave it to us. We, of course, like all Americans, assented. When one naked man after another is brought in, and always looked at with the same blank stare by these women, why, we men blush, if the women don't. If they would only confine themselves to their own sex, or at least not attend such clinics with men! It is a shocking want of modesty, and I haven't heard a person express any thing but disgust at it. Even the medical local journals get in some flings at the "American women" now and then. I think there are six of these young ladies here, one of whom is making a specialty of surgery. What next?

During the day there are two other lectures on skin-diseases, by Drs. Geber, Hebra's first-assistant, and Kaposi (formerly Cohn), Hebra's son-in-law. Altogether one can hear five hours' lectures daily, visit in the wards, and see about twenty-five out-patients.

As a not unimportant branch of skin-disease comes syphilis, with Prof. Sigmund at the head. He gives daily lectures in his wards through the *semestre* for the limited sum of two and a half dollars.

He is another of the original geniuses here. Punctual to the moment, he rushes into the ward, and lectures like a steam-engine for an hour. For the first half-hour the lecture is in the female ward. The patient is either on the table or naked before him. With a sound in one hand he beats continually on the patient, to emphasize his remarks. He talks in all languages, especially Latin, gives much valuable information, and cracks a good many jokes. The latter are especially funny, because he always adds immediately after, "I don't joke, gentlemen; life is serious." He expects to reap a rich harvest from the exposition. One of his favorite remarks is, that "syphilis is no disgrace, but the way patients are *treated* for it is." He's a noted linguist, a most indefatigable, honest worker, and very pleasant to everybody. It shows how original Hebra and Sigmund both are, that the former should insist the unalistic doctrine of syphilis is the only correct one, and the latter with equal pertinacity hold to the dualistic view. Sigmund's course includes other venereal diseases. An excellent six weeks' course, several times yearly, is given by his assistant, Dr. Grünfeld.

There are other venereal wards under charge of Prof. Zeissl and his assistant, Dr. Ausspitz, and also courses by them. I should say altogether there must be fully four hundred cases of venereal disease in the hospital, and very fully at the disposal of the student.

Billroth you know all about, from his book and otherwise. He still gives excellent lectures, and performs numerous operations daily. Two of his assistants give operating courses, as well as the assistants of Prof. Dittel.

Bamberger, the successor of Oppolzer, is very popular with the students. His lecture-room is large and pleasant, and always filled. Patients are brought in in their beds from the wards, and a student is called down to make the diagnosis. Bamberger allows him to fumble round (the German students are great fumblers) for a few minutes, and then rapidly examines the patient, and by elimination arrives at a diagnosis. After this the disease is discussed and treatment given. The urine is examined by an assistant chemically and microscopically under the professor's eye.

Interesting pathological specimens are shown, and autopsies related. In short, every case is completely given.

There could not well be greater opportunities than those here, for the studying of the eye, ear, larynx, and lungs.

Prof. Jaeger still gives his operating courses and practice in the use of the ophthalmoscope. In the latter course he lectures twice a week, on which occasions he shows many entirely new sections and injections of the eye under the microscope, and also a good many of his superb plates, which are made especially interesting and brilliant by means of a *camera-obscura* light he throws on them. These are six weeks' courses, and continue all the year round. His assistant, Dr. Schnaebel, gives a fine course on pathology and therapeutics of the eye, also six weeks.

Professor Alt operates and also holds a clinic daily. At the latter there must be each day from fifty to one hundred patients. He is never in a hurry, but examines every case after a certain method he has pursued for years. Sometimes he becomes excited, when he gives a German student a case to diagnose, and he gets it entirely wrong. The other day a student couldn't tell him if a blennorrhœa came as a rule on both lips or not. "Is blennorrhœa in the habit of coming on one side of the vagina?" he asked.

His two assistants, Sattler and Bergmeister, give six-week courses all the year round in operations and use of the ophthalmoscope. It will be seen from the above that five six-week courses, and a clinic and operations, are constantly in progress.

It is the same way with the larynx and the attached branch of percussion and auscultation. Schrötter, Störk, Ronsberger, Schnitzler, and others are constantly giving courses. Schrötter and Schnitzler give percussion and auscultation courses, and, in addition to them, Prof. Stern and Dr. Beyer, first-assistant of Bamberger. The latter will give a course to as many as four men. He has the entire run of Bamberger's wards, and, being a sharp diagnostician, a good lecturer, and exceedingly painstaking man, a course from him is invaluable. In such a course one gets to taking a personal interest in the cases he sees daily, and has further an opportunity of following the treatment. I should like to give some of the results of the "Wasser Behandlung," first advocated by Brand in Stettin, in typhoid fever, and the further use of hydrotherapy, but have no room here.

Plitzer and Gruber are the ear specialists. They both hold constant six-week courses. Their lectures consist chiefly in exhibiting and demonstrating the enormous number of cases in their clinics.

Four weeks from one of these men throws at least a little new light on the drum of the ear. A little such light goes a good way, fortunately.

As you know, Wiederhofer is our great man in children's diseases. He holds a daily clinic at a small children's hospital, five minutes' walk from the hospital. The material is chiefly out-patients, five or six daily. The professor is an elegant lecturer, and in his course goes over the whole field thoroughly, but at the same time I think it must be confessed that the material is hardly equal to what one sees in other specialties. To be sure, there is a town clinic where Drs. Monti and Fleischmann hold lectures at the dispensary, but here also the patients are limited. In addition to these courses, there are none given in this branch. No ward-visits, etc.

Pathology is moderately good. Rokitansky is old, and his lectures on pathological anatomy are very hard to understand, and very thinly attended. Stricker gives a university course on pathology. He had twenty-five students at the beginning of the *semestre* (with three exceptions they were Americans), but toward the last month the lecturer grew dull, the students fell off, Stricker became disgusted, and the course stopped.

There is an enormous number of autopsies daily, at least ten. Students have the privilege of witnessing these. Dr. Kundrat, first-assistant of Rokitansky, performs most of the autopsies. The Americans thought it would be very instructive to get Kundrat to give them an hour's demonstration daily of the best specimens. Accordingly, he gave a three months' course, during which time several thousand specimens were shown, explained by admirable lectures, and graphic drawings on the black-board.

As for microscopy, students can work in Stricker's laboratory, but not more than one good course is given.

In examination of the urine there are excellent courses.

Besides the above numerous courses, there are others in hydro- and electro-therapeutics, in nervous diseases, in bandaging, in climatology, structure of the urethra, in orthopedic surgery, in teeth, in regional anatomy, etc.

In pathology and microscopy, this school is certainly far behind Berlin, not only that there is less system in the teaching, and less interest taken in it, but also because the old ideas are still adhered to with great tenacity. Rokitansky follows the old nomenclature in tubercle, and calls broncho and catarrhal pneumonia simply tuberculosis, for instance.

As for clinical medicine, Bamberger and Duchech here are to be weighed against Traube and Frerichs, in Berlin. The material is much the same. The percussion and auscultation part is better here.

As you will see from the above, children's diseases and gynæcology are very good here, but perhaps better in London. In all other branches, the hospital here surpasses all others: 1. In amount of material. 2. In number of good teachers. 3. In the freedom with which patients may be used for purposes of demonstration. 4. In the collection of all diseases within one yard, thus saving much valuable time lost in London. 5. In the arrangement of short, six-week courses, constantly repeated. The latter is peculiar to Vienna, being not customary in Berlin, with two exceptions. A person can come here at any season of the year and be pretty certain to find such courses as he wants either beginning or soon to begin. From the large number of specialists one can take several courses at the same time, thereby economizing in time.

The professors, *docents*, and assistants, are almost without exception exceedingly kind and polite gentlemen. Nobody is "stuck up," but even such men as Hebra, Billroth, Alt, and Bamberger, do their very best to show each student any thing of interest. They seem to regard their mission as teaching, and not being eloquent. At Hebra's clinic we even take patients out of his hands, and if he sees a student has not got through looking at a case, even if he wishes it for further demonstration, he waits until the student finishes. One never feels afraid to ask questions of such men.

The professors even write out their own tickets, many of them. For instance, you follow Hebra into his little room just before his lecture, and tell him what you want. He carefully writes your name out, gives you as good a place as possible, and takes the money. The assistants and *docents* are all very polite. One appreciates such politeness when away from home.

There must have been at least sixty Americans here last winter, and perhaps five Englishmen. As I have elsewhere said, the private courses are chiefly made up of Americans. Owing to the high prices, the number of German students has been limited this winter, and probably still more will fall off during the Exposition, when room-rents will be trebled.

There is a very good hotel within five minutes' walk of the hospital, called "Hôtel Hammerand zum goldenen Schlüssel," known generally as the "Schlüssel." It has been very cheap, sixty cents daily, but the price will go up in consequence of the Exposition.

I write the name, as it may be of use to some one coming here for a short time. WALTER CHANNING, JR., M. D.

Bibliographical and Literary Notes.

ART. I.—*A Manual of Histology.* By Prof. S. STRICKER, of Vienna, in coöperation with THEODOR MEYNERT, VON RECKLINGHAUSEN, MAX SCHULTZE, W. WALDEYER, and others. Translated by Henry Power, of London; James J. Putnam and J. Orne Green, of Boston; Henry C. Eno, Thomas E. Satterthwaite, Edward C. Seguin, Lucius D. Bulkley, Edward L. Keyes, and Francis E. Delafield, of New York. Edited by Albert H. Buck. 8vo, pp. xi.–1106. New York: William Wood & Co., 1872.

WE may well be thankful to the American editor and his collaborators for presenting this elaborate treatise, so excellent in character, in a form accessible to all American readers. In order that all portions might present equally recent views, about thirty-eight contributors appear on its pages. This makes the work more exhaustive, not only because the authors investigate their respective subjects the more thoroughly, but, as there is necessarily some overlapping, the one upon the other, the different methods of presenting a point add to its elucidation. Not upon all points, indeed, is there perfect agreement; on the contrary, some widely-different views are entertained by the several authors; but, so far from this feature being an occasion for criticism, it rather adds to the interest.

A discussion of the principal points in a treatise embracing the scope of the one under notice cannot be expected; indeed, we shall be contented if we succeed in presenting some of the special views of the authors in a manner intelligible to our readers.

The "General Methods of Investigation," by Prof. Stricker, occupies the introduction. It is by no means exhaustive, but much good matter is clearly presented, the most prominent of which is, the application of heat (by means of electricity) to the object examined, and directions for constructing and maintaining the moist chamber for microscopical examination.

Chapter I., by Prof. Stricker, gives "The General Character of Cells," embracing great depth of research and a completeness of description commensurate with the design of the work and ability of the author. Concerning vital movements, and functions of cells, the following statements are noticed:

"In stating that protoplasm is capable of active or vital movements, we have by no means admitted the existence of an immaterial force. Ed. Weber has expressed himself very decidedly upon this point, and at the present day the position he took up is still tenable. 'According to my view,' said Weber, 'the movements of any living body are not dependent upon two kinds of force, namely, first upon forces which are exerted on this body by other bodies; and, secondly, upon forces which are exerted on this body by life; but there is only one kind of force on which the movements of all the bodies depend, namely, the force which is exerted on it by other bodies.' We name the movement of certain bodies 'vital,' in the sense that the forces which we then call into play are subject to other varying influences, and we denominate the apparatuses and processes of which these influences are the result, 'organization' and 'life'" (p. 34). Also (p. 40): "With regard to the specific functions of cells, we must limit ourselves to the statement that there are cells possessing very various physiological functions, as nerve-cells, muscle-cells, gland-cells, etc.; and, inasmuch as we are unable to conceive any functional process to take place in a cell without the concurrence of chemical processes, we must suppose that the specific functions of the cells in these several cases are essentially dependent on the nature of the chemical processes occurring in them."

Meynert states in his article on *The Brain of Mammals* that the first idea helping to understand the intricate subject is, "the recognition of *sensibility* as a functional attribute of the nerve-cell" (p. 650).

Perhaps both Stricker and Meynert, like Huxley, on interrogation, would disclaim the appellation of "materialist," but these statements certainly convey to our minds a leaning in that direction. It may be doubted if a cell, the life of which has once become extinct, can ever by chemical forces, or all the common forces of Nature combined, according to the best-directed efforts in the understanding of man, be restored to vital motion or functional activity. From the fact that there is nothing material which is at all comparable with the mind in its aims or accomplishments, it may be rather inferred that matter acts in obedience to *it* as a distinct entity rather than that it, as is expressed by a recent able writer, is a "force developed by nervous action." If *conscience*, or *moral character*, is an attribute distinguishing man from all other animals, and if the only difference found in the brain of man and animals nearest akin is more of such a character as to indicate differences in intellectual and physical powers, it may be inferred that this attribute exists independent of the brain, its *sensibility*, *emotions*, etc., being affected by and manifested through the functional activity of the nervous system.

Three methods of cell genesis are said to take place—namely, nuclear division, the formation of new nuclei from the protoplasm, and the formation of *daughter* cells within the old one, from which they escape. The nucleus is not supposed to be essential to the life of the cell.

Chapter II., on "The Connective Tissues," by A. Rolett, is very complete and full of interest. Golerbew's view of the transformation of the white corpuscles into the red finds acceptance; the question of the wandering cell helping in the ordinary proliferation of the original mass is still undecided; the difference between the migratory and the finely-granular cell is readily discernible.

Respecting the development of fibrillæ, the statement occurs on page 80:

"Further investigation has shown the original interpretation of Schwann to be the correct one, and that the fibrillæ of the connective tissue take their origin from the elongated cells, either by the splitting up of the cell-body into fine fibrillæ, or by the body of the cell becoming drawn out into one long fibrilla."

In order to show the fibrillar structure, it is recommended to add tannin to the preparation after maceration in lime-water. Many tissues, like aponeuroses, ligaments, etc., are formed after the type of the tendons.

Cartilage and *bone* are very well described in this chapter, although nothing particularly new is advanced. Long bones are developed in length by cartilaginous growth, in thickness by means of the periosteum, as described by Virchow;[1] flat bones originate in the second layer of the periosteum, as was described twenty years ago by Hassall.[2] More recently Ollier[3] has attempted to show that long bones increase in length by interstitial growth.

Chapter III., on the "Structure of the Nervous System," by Max Schultze, comes next in order, opening a wide field for study. With a view of bringing into notice some of the special views advanced, we embrace under this head Chapter IV., "The Tissues of the Organic Muscles," by J. Arnold; Chapter V., "Mode of the Termination of Motor Nerves," by W. Kühne; Chapter XXXI., "The Spinal Cord," by J. Gerlach; Chapter XXXII., "The Brain of Mammals," by Theodor Meynert; and Chapter XXXIII., "The Sympathetic Nervous System," by S. Mayer.

A favorite opinion of Max Schultze respecting the nerve-fibre is, that it consists of *primitive fibrillæ*, this condition obtaining in all nerves and under all circumstances, separated (usually) by interfibrillar material, and collected into fasciculi, frequently enclosed in a medullated sheath, and over this a delicate sheath of connective tissue—the sheath of Schwann.

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[1] "Cellular Pathology," American edition, p. 451.

[2] "Microscopic Anatomy," American edition, p. 326.

[3] *British Medical Journal*, September 8, 1872.

Gerlach accepts Schultze's view of the intimate structure of the axis cylinder; Mayer also (p. 767) accepts his view of the general character of the nervous elements in sympathetic nerves, but denies the fibrillated structure of the ganglion-cells (Arnold and Bidder not having discovered it), stating that the nervous substance consists of an homologous fundamental substance, in which are scattered fine granulations (p. 769). "The division of the fibrillar axis-cylinder (according to Schultze, p. 125) probably consists only in a gradual process of isolation of the associated primitive fibrils. The medullary sheath is continued at the point of division over the branches, and is finally lost at their extremities. It is very remarkable that at the point of division, in consequence of a sudden diminution in the quantity of the nerve-medulla, an attenuation of the nerve-fibre occurs, while beyond this point, when the division is completed, the medulla is again found in its normal proportion. The sheath of Schwann divides in precisely the same manner." According to Gerlach (p. 627, *et seq.*), the white substance of the spinal cord is enclosed in a layer of connective tissue, which is a continuation of the pia mater; and the sheath of Schwann is composed of elastic fibres, forming the neurilemma, affording protection to the nerve-fibres in the varied movements to which they are subjected. The opinion respecting the sheath being elastic fibres, is based upon the fact that they oppose the action of alkalies, and are indifferent to the action of ammoniacal carmine.

In regard to the *central origin* of nerve-fibres, much difference of opinion exists among investigators. Schultze maintains that no central termination is yet proved to exist, the fibrils probably only traverse the ganglion-cells. He says (p. 134): "It is obvious that such a ganglion-cell is only a nucleated enlargement of the axis-cylinder." Also (p. 137): "And thus the fibrils which are seen traversing the substance of the ganglion-cell do not originate in the cell, but only undergo a kind of arrangement in it, and thus pass to the axis-cylinder process, or extend into the other branched processes." Gerlach, Meynert, and Mayer, however, take the opposite view, the last-named author maintaining the existence of delicate fibres within the cell *proceeding from the* *nucleus and nucleolus.* Basing his opinion upon the examination of a large number of mammals, he says:

"I have always seen the processes take their origin in the cell-substance itself, the cell-substance prolonging itself as it were into the process; and I have never observed any connection between the process and the nucleus or nucleolus. . . . I have, furthermore, become convinced that these very commonly proceed toward processes of relatively large diameter which spring from the cell-substance, a second system of delicate fibres originating in the nucleus and nucleolus. . . . I have no doubt but that, under favorable conditions, it will become possible to discover the mode of union between the straight fibre and the nucleolus" (p. 773).

The question whether the straight or the spiral fibre is afferent is undetermined.

While Meynert, Gerlach, and Mayer, believe in the occurrence of *anastomoses*, Schultze maintains that their observations require corroboration. Want of space forbids following up their respective views.

Schultze agrees with Kühne in regard to the *peripheral termination* of motor nerves, this view being that of terminal plates beneath the sarcolemma. This view differs from that of Engelmann and Rouget,[1] in so far that the last-named observers believe the nerve-fibre to be connected with the "granulated substratum" beneath the plate or bulbs. Schultze mentions the observations of Langerhaus respecting nerve-terminations in the rete Malpighii. These "do not terminate by free extremities, but enter into small cells lying between the deeper cells of the rete mucosum, which again give off several fine fibrous outrunners into the upper layers; and these finally terminate with slightly-clubbed extremities just beneath the horny layer" (p. 142). Arnold claims to have discovered a *net-work* termination of nerve-fibres in smooth muscles. This appearance has not been observed by Engelmann or Frey,[2] who have investigated this point.

The several articles under notice, taken together, make a very complete account of the minute anatomy of the nervous system; Gerlach's article on the spinal cord is excellent, and Meynert's on the brain quite exhaustive, occupying over a hundred and twenty-six pages. To enter into an account of the anatomy of these organs, would lead us far beyond our limits. We cannot forbear noticing, however, a few points. Respecting the *course* of the fibres within the spinal cord, Gerlach says (p. 646):

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[1] Compare Frey's "Microscope and Microscopical Technology," American edition, p. 362, *et seq.*

[2] *Op. cit.*, pp. 365, 366.

"As regards those nerve-fibres which, developed from the nerve-fibre net-work, return backward without crossing the median line to enter the posterior column, purely anatomical means will not allow us to decide whether the decussation is partial or complete; although pathological observations as well as the experimental results of the most competent investigator in this department, Brown-Séquard, indicate a complete crossing over."

Meynert regards the olfactory lobe and optic nerve as having the same morphological significance as the cortex cerebri; the auditory nerve, however, is not classed the same on account of its connection with the cerebellum, in opposition to the opinion of Deiters. He differs from L. Clarke on the nature of the anterior column of origin of the mixed lateral system, because Clarke, he states, looked upon it as a prolongation of the inferior facial nucleus, mistaking the nature of the latter.

Respecting the cerebellum, he says:

"The well-known relation of the cerebellum to the muscular sense presupposes the passage of other nerve-tracts, besides that of the auditorius, through that nervous centre, on their way to the cerebrum. That the cerebellum, however, cannot represent any thing more than an important way-station for the impressions derived through the nerves of muscular sense, is shown by the fact that they, like sensory impressions of every kind, are taken cognizance of by consciousness, which thereby, to use Wundt's happy expression, give the signal of their arrival within the cerebral lobes" (p. 757).

The discussion of the cells of Purkinje ends by the supposition that there is reason "for regarding each of the large cells in question as a node, an articulating joint as it were, serving to effect the transition of a nerve of a certain kind into a number of other nerves, whose functional significance is the opposite of its own" (p. 758).

The "Structure of the Heart" is written by F. Schweigger-Seidel, embracing Chapter VII. In view of Eberth's investigations relative to the structure of the fibre, he having discovered in some of the vertebræ that the tissue is made up of cells, he says: "So that what was commonly regarded as a single fibre turns out to be a complex structure composed of one or many nucleated, transversely-striated muscle-cells. Here, therefore, in opposition to the term fibres, applied to the elements of the ordinary muscles of the trunk, we may speak of chains of muscle-cells or muscle-cell trabeculæ" (p. 180).

Schweigger-Seidel is of the opinion that the fibres of Purkinje pass directly into muscular bands, and in some animals the ordinary muscular fibres take their place. "The controversy whether this or that animal possesses the fibres of Purkinje is therefore of small importance, because the differences depend merely upon the various forms presented by the endocardial muscle" (p. 185). Instead of regarding the valves of the heart as a duplicature of the endocardium, their substance is said to consist of two layers: a fibrous, continuous with the fibrous rings; and an elastic, a prolongation of the endocardium of the auricle in the venous, but a prolongation of the lining of the ventricle in the arterial valves. Luschka thinks the valves are made up of a prolongation of the arterial walls, but the more recent investigations of Gussenbauer seem to disprove that view.

The distribution of the nerves in the heart is veiled in much obscurity, on account of the necessity of dissolving the muscular tissue in order to isolate the nerve-fibre. Kölliker thinks the pale nucleated fibres in the frog terminate the same as in the voluntary muscles; while Krause is of the opinion that "the double-contoured nerve-fibres of the cardiac muscle end in motor terminal plates." On p. 189, the following summing up occurs:

"Notwithstanding the doubts that exist on some of these points, it may be regarded as well ascertained that the finer branches of the cardiac nerves lie between the proper elements of the muscle, and so come into immediate contact with the contractile substance which is here destitute of sarcolemma."

The net-work theory of the termination of the nerves in the serous membranes is accepted.

Chapter VIII., on "The Blood-vessels," is very satisfactorily written by C. J. Eberth. The structure of the capillaries, although the researches of Hoyer, Auerbach, Aeby, Eberth, and Chrzouszczewsky have shown them to possess cellular walls, is not admitted to be cellular from the commencement, Eberth believing, with Stricker, that they commence as outgrowths of protoplasm which become hollow, and afterward assume a cellular structure. It is this protoplasmic process which, before assuming a tubular form, forms the solid anastomosis of Stricker. Eberth is the only one of the above-named discoverers of the cell-structure of the capillaries who takes this view. Frey[1] gives support to the view of their cellular structure *de novo.*

The *coccygeal gland* is supposed by Eberth to be a plexus, sometimes varicose, embedded in a stroma of connective tissue. The name "plexus vasculosus coccygeus" is proposed. There are no lymphatics in the blood-vessels.

Chapter IX., by F. von Recklinghausen, on "The Lymphatic System," is of more than ordinary interest. The lymphatic capillaries act as a sort of drainage-tubes; are possessed of a *membrane*[2] with *openings;* and are directly continuous with "*serous canaliculi*" traversing the connective tissue of an organ. This last-stated proposition is not exactly in accordance with the view of Ludwig and Brücke, who think the lymph-capillaries terminate in simple lacunæ, and is equally opposed to the view of Kölliker, Leydig, Virchow, and Donders, that they constitute closed membranous tubes, taking their origin in the stellate connective-tissue corpuscles.

"The open communication existing between the serous canals and the capillary lymphatic vessels enables the latter to receive substances from the former; and the facts that have already been adduced, in regard to the behavior of the villi during chymification, afford sufficient evidence of the passage of a lymph-current through the interstices of the tissues (serous canals) into the rootlets of the lymphatic vessels. Moreover, the passage of the cellular elements of the connective tissue from the serous canals into the lymphatics, although not as yet directly witnessed, is in the highest degree probable, since they migrate from place to place within the lumen of the former" (p. 229).

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[1] "The Microscope and Microscopical Technology," American edition, pp. 376, 377.

[2] Supported by Frey, *op. cit.*, p. 393.

Respecting the relation the serous-canal system bears to the blood-capillaries, we again quote, from p. 232:

"Since, however, it has been demonstrated by Aeby, Auerbach, and Eberth, by means of solutions of nitrate of silver, that the walls of the capillaries were composed of epithelium, at all events in such organs as they had examined; since, moreover, the permeability of the vascular wall for the red blood-corpuscles (Virchow, Stricker), and also for the colorless corpuscles (Cohnheim), has been noted under circumstances which, though certainly not normal, yet can nevertheless be so rapidly brought about that it is impossible to admit the occurrence of a qualitative change in the nature of the capillary wall, *I consider it to be very possible that the serous canals may stand in the same open continuity with the blood-vessels as with the lymphatics.*[1] That such communications do actually exist under normal conditions, is also rendered highly probable by the well-known fact that in the lymph, and especially in the chyle, not only colorless, but also red corpuscles, may be discovered."

These propositions are fully discussed, and, although not absolutely proved, seem very plausible.

The *follicles of the digestive tract* are regarded as belonging to the lymphatic system, forming "lymph-cells in their interior, which pass into the lymph-lacunæ, and then constitute ordinary lymph-corpuscles" (p. 234). The larger number, however, of the lymph-cells are supposed to originate in the follicular substance of the lymphatic glands, and the remainder move in spaces communicating directly with the interior of the blood-vessels (migrating from the blood). The lymphatic cells originating in the splenic follicles are conducted away by the veins. The characters of pus-corpuscles, lymph-corpuscles, migrating connective-tissue corpuscles, and colorless blood-corpuscles, agree in all respects.

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[1] Italics our own.

Chapter XIII., by A. Rolett, affords a full description of "The Blood." The red corpuscles are supposed to be destitute of a cell-membrane; they are regenerated largely from the white corpuscles, and rarely multiply by fission. The question is still open whether the white corpuscles undergo multiplication within the blood itself or not, but it is certain that they originate to a great extent in the lymphatic glands. Admitting the possibility of degeneration of the white corpuscles in the blood, Rolett is assured of the fact of their migration into the tissues, "and that they participate in effecting certain plastic processes in the tissues" (p. 292). Support is given to this latter statement by Waldeyer, who states on pp. 515, 516, that the wall of the Graafian follicle in the ovary "seems to be directly connected with the development of the vessels, and it readily suggests itself that a certain share of the work should be attributed to the colorless cells, which have wandered thither." The red corpuscles are destroyed in menstruation, and in the preparation of bile (after Kühne); and possibly disintegration takes place also in the spleen (forming pigment) and in the medulla of the bones.

In Chapter XIV., on the "Salivary Glands," by E. F. W. Pflüger, a few points engage our attention:

1. The medullated nerve-fibres break up into exceedingly minute and numerous fibrillæ, which penetrate the membrana propria, lose their sheath at the surface of the cell-protoplasm, and become continuous with the substance of the cell itself. 2. The multipolar cells are regarded as ganglion-cells, which communicate, not only with the salivary cells, but also with the nerve-fibres—another mode of termination of the nerves. "The true salivary cell is an enlargement of a medullated nerve" (p. 309). "It is not surprising that the medullated primitive fibres are sometimes very fine, sometimes very thick, when we know that the epithelial cells gradually increase to substantial structures from minute nodules on the extremely fine axis-cylinder fibrils. With their increase, the size of the

nerve also augments; it acquires a medulla, and becomes progressively thicker (pp. 306, 307). 3. The glandular epithelium is regenerated from subdivision into fibrillæ of the columnar cells of the salivary tubes independent of the nuclei, which fibrillæ become nucleated and enlarged into epithelial cells, the columnar cells themselves being formed from the nerve-fibre. "When we see the axis-cylinder and its fibrils to be directly continuous with the fibrils of the columnar cells, without any difference being perceptible between the axis-cylinder and the fibrils of these cells, we may legitimately describe the nerve as extending to the point where it joins the substance of the body of the cell. That is the most natural explanation that can be given. This explanation, however, possesses the greatest significance in regard to the mode of development of the glandular epithelium, because it directly follows that the young nuclei originate in the axis cylinders, and that the gland-cells which at a later period seem to constitute a thickening of the axis-cylinder bud forth, as it were, from the nerves. This explanation renders it intelligible why the nuclei of the columnar cells are so indifferent during the multiplication of the epithelium" (pp. 313, 314). 4. The "healthy saliva contains no morphological elements," and the structure of the gland is not altered by the normal performance of its function. These points are thoroughly discussed, but we question the acceptance of all the views by a majority of his readers.

Chapter XVI., comprising the articles on the intestinal canal, is written by E. Klein and E. Verson, who conducted their investigations in Stricker's laboratory. Klein, in describing the mucous membrane of the stomach, admits the existence of but one kind of gland-tubes; those near the pylorus, although the columnar epithelium extends far down the tubes, contain peptic glands at the bottom. Heidenhain, Rolett, and Frey,[1] from recent investigations, regard the existence of *mucous* glands, as well as peptic, as a demonstrated fact. While the wall of the gastric gland is structureless, according to Klein, the so-called membrana propria of the crypts of the small intestine is not entirely structureless, being traversed by delicate fibrils. Verson, along with Leydig and F. E. Schultze, regards the epithelial cells as one-celled glands which undergo metamorphosis into goblet-cells.

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[1] *Op. cit.*, pp. 427–429.

Chapter XX., by F. E. Schultze, treats of "The Lungs." The groundwork of the alveolar wall is said to be made up largely of connective tissue traversed by fibres of elastic tissue. We mention this because Waters[1] denies the existence of connective tissue in the air-cells of the adult, except in the contiguous portion of the alveoli. In the description of the bronchi, mention is made of Schultze's "beaker-cells." The chapter is interesting, quite original, and includes a good description of the comparative anatomy of the organs of respiration.

Chapter XXV. treats of "The Ovary and Parovarium," by W. Waldeyer. The stroma of the organ is largely made up, in man and mammals, of connective tissue, the smooth muscular fibres being restricted to the vascular zone which lies in contact with the cellular layer of the parenchymal zone. We have already alluded to the view that the wall of the follicle is developed in connection with the development of the vessels, and that the migratory cells probably have something to do in the process. The egg is developed during embryonic life, according to the view of Pflüger, from the cells of the epithelium dipping into the stroma, which simply forms support to the epithelial formation.

"Very soon a small spherical growth, rich in cells, will be seen pushing its way up from the interstitial tissue of the Wolffian body beneath the epithelian thickening just mentioned. *The thickened epithelium above it now gradually becomes so disposed as to form the foundation for the Graafian follicle and eggs, and also for the subsequent ovarian epithelium;* whereas the connective-tissue growth is destined to constitute the vascular stroma of the ovary. . . . From the regularity in shape of these formations, and from the constancy of the locality in which they are found, it may safely be inferred that these are in fact very young primordial eggs, which have become developed already during embryonic life, by simple growth from the germ epithelial cells" (pp. 528–529).

The author inclines to the opinion that the cells of the follicular epithelium are gradually destroyed in the liquor folliculi, contributing, together with a transudation from the blood, to its formation.

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[1] "Diseases of the Chest," 1868.

Stricker (p. 1057), in the excellent and concluding chapter of the work (XXXVIII.), on the "Development of the Simple Tissues," is disposed to criticise Waldeyer's nomenclature of "germ [or plastic] yolk," and "subordinate [or principle] yolk," considering these expressions to be based on erroneous views. This chapter presents too broad a field for discussion in a general review.

"The Organs of Taste" (Chapter XXXIV.) are well described by T. W. Engelmann. The nerves (although it is somewhat uncertain in man) terminate by division of the medullated fibres of the glossopharyngeus into fine fibrillæ, containing minute ganglion-cells, beneath the papillæ circumvallatæ. Here they form a plexus from which bundles of fibrillæ extend into the papillæ, in which they intercross and intertwine; from this the finest fibrils probably extend to the centre of the taste-bud and become continuous with the central processes of the taste-cells. Schwalbe has seen similar fibrils projecting above the free surface of the buds. Engelmann describes the "forked cells" found in amphibiæ, and is inclined to consider them continuations of the nerve-fibres. Methods for examination are furnished.

About one hundred and fifty pages are devoted to the anatomy of the organ of vision, and over one hundred to the description of the organ of hearing, by different authors, who give their respective subjects full discussion.

Passing the work in general review, it cannot be expected but some disparity in the strength of the different writers may be noticed; yet the authors are men of ability, and for the most part have endeavored to do their work well. The translators also have apparently performed their labor with much pains. But few errors may be noticed: as if by common consent, "enclose" is written for *inclose;* "attain," although a convenient word for medical writers, is frequently used incorrectly. It implies an *effort* in arriving at a certain point, as to *attain knowledge, attain to a high position.*

We have not, perhaps, chosen the *most* interesting topics for especial notice, but have sought, although in a very superficial manner, to collect points from different portions of the work, in order to give a general idea of its character. We are free to express the opinion that it is the best work upon the subject with which we are familiar, not only in extent of design, but also in depth of research and lateness of views presented. The full references given by the authors render it of inestimable value to the thorough student of histology. There will no longer be an excuse for the student and practitioner of medicine for not being well grounded in one of the important fundamental studies of the profession, and we hope the opportunity for improvement will be generally embraced.

C. H. R.

Art. II.—*The Pathology, Diagnosis and Treatment of Diseases of Women, including the Diagnosis of Pregnancy.* By Graily Hewitt, M. D., Lond., F. R. C. P., Professor of Midwifery and Diseases of Women, University College, etc., etc. Second American from the third London edition, revised and enlarged. With One Hundred and Thirty-two Illustrations. Philadelphia: Lindsay & Blakiston, 1872.

This admirable treatise on the diseases of women has already taken its place as one of the standard works among the profession in this country, and is therefore in no need of detailed criticism. Our only duty is to give assurance of the special merits that characterize the last edition, which has been so far improved that the author deems it substantially a new work, containing, as he says, "certain generalizations on the important questions of the pathology of diseases of the uterus which have forced themselves on my attention in the course of several years' experience, and which involve the adoption of views, in reference to the pathology and treatment of diseases of the uterus, which are new as compared with those embodied in the early editions of this work." One peculiarity which commends the views of Prof. Hewitt to the practitioner is the fact that theory is always made secondary to actual clinical observation. It is a common fault with authors to advance certain "views" at the outset, and afterward endeavor to sustain them by a prejudiced interpretation of the lessons of the clinic. This Prof. Hewitt carefully avoids, so that the student who follows him is in no danger of being led astray. Some objections have been made to the arrangement of the work before us, as involving reference to several chapters in different parts of the book, in order to obtain a complete view of the symptoms, diagnosis, pathology, and treatment of a given disease, but this can hardly be said to detract from the value of the treatise to the earnest student of gynæcology, who must recognize the extremely complicated nature of most uterine disorders, and the necessity of attaining a comprehensive knowledge of all of them, in order fairly to appreciate any single disease. There are other works from which the student preparing himself for examination may obtain more systematic information in the limited time at his disposal, but to the general practitioner we can recommend Prof. Hewitt's work as one of inestimable value, and the last edition as a great improvement on its predecessors.

ART. III.—*A Treatise on Apoplexy, Cerebral Hæmorrhage, Cerebral Embolism, Cerebral Gout, Cerebral Rheumatism, and Cerebro-Spinal Meningitis.* By JOHN A. LIDELL, A. M., M. D., etc. 8vo, pp. xix.–395. New York: Wm. Wood & Co., 1873.

THE author classifies *apoplexy* upon a clinical, rather than upon a pathologico-anatomical basis, and defines it as "a disease of the brain, which is characterized by the *sudden*[1] abolition of consciousness, feeling, and voluntary motion, and is produced not by injury, nor by poison, nor by heat, but by some morbid action in the brain itself." This morbid action, whether due to extravasation, congestion, œdema, or whatever cause, is always the result of one condition, viz., anæmia of the brain in a sufficient degree to paralyze the nerve-fibres and ganglion-cells. This is the view of Niemeyer,[2] who is freely quoted. It is held that the amount of pressure capable of compressing the capillaries and arresting the capillary circulation does not injure the nerve-fibres and cells, so that even in active congestion the nervous substance suffers from lack of nourishment.

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[1] Italics ours.

[2] "Text-Book of Practical Medicine."

Viewing the apoplectic condition from the author's standpoint—limiting it to the *suddenly*-occurring cases—we accept this view; but, should we dissent from the author's classification, it is in no spirit of criticism, nor with a view to detract from the value of a treatise so practical.

The apoplectic state occurs in obedience to a great variety of pathological conditions, so that we are more inclined to view it in the light of a *symptom* of the primitive lesion, so far as it may be understood, rather than as an *entity* of the following varieties given by the author: 1. Congestive; 2. Serous; 3. Hæmorrhagic; 4. Embolic; 5. Nervous. While the author recognizes that the terms apoplexy and cerebral hæmorrhage are not synonymous, he styles the form of hæmorrhage which produces a *sudden* loss of consciousness "apoplexy," but, if we understand correctly, the more usual variety, which gives rise to hemiplegia, and later to unconsciousness, as "cerebral hæmorrhage." We confess the discrimination seems rather nice, although his nomenclature is in accordance with the ancient usage of the term apoplexy.

It is convenient, we admit, to speak of the apoplectic state as a disease, and name it in accordance with its cause, the same as we speak of renal dropsy, or cardiac dropsy; but we no longer describe dropsy as a disease, but consider it as a symptom in giving the clinical history of the antecedent affection. The classification of all nervous diseases upon an anatomical basis is, at the present time, perhaps, premature; but, so far as facts become well established, we believe by all means in conforming to them.

The author seeks to distinguish between the apoplectic and the epileptic states, but fails to present a very clear discrimination to our mind. The mechanism of convulsions is effected by one essential condition, viz., anæmia of the whole motor tract (which may be produced by vaso-motor spasm, or paralysis, or may occur in an hydropic condition of the blood);

this induces syncope or sudden loss of consciousness; the spasmodic closure of the glottis causes a retention of carbonic acid in the blood, which induces coma,[1] and arrests the convulsion. If the withdrawal of nourishment from the nerve fibres and cells is *suddenly* produced, and in *sufficient* degree, as by excessive loss of blood, a rapid congestion, or pressure on the brain-substance from any cause, paralysis of the fibres and cells, in degree depending on the extent of the arrest of the circulation, is induced, the coma being intensified in proportion to the amount of carbonic acid retained in the brain-substance.

A tumor encroaching upon the brain substance by a gradually-increasing pressure is apt to provoke convulsions; whereas, a serous effusion occurring rapidly, or an extensive extravasation of blood, will speedily produce apoplexy or unconsciousness without convulsions.

Handfield Jones[2] conceives the determining cause of the epileptic paroxysm to be cerebral anæmia from spasm of the cerebral vessels. Hammond[3] has observed convulsions in embolism of the middle cerebral artery. Trousseau[4] recognizes the identity of the epileptic and apoplectic condition. Kussmaul and Tenner[5] state, as a result of their experiments, that "epileptic convulsions only manifest themselves in man when, together with the cerebrum, some or all of the parts of the encephalic mass lying behind the thalami optici are suddenly deprived of blood to a sufficient amount, but that sudden falling down, announcing the approach of an apoplectic attack, unconsciousness, and insensibility, originate in causes proceeding from the brain proper." In Case VI., which the author calls *apoplexy* (pp. 61, 62), the patient fell suddenly without convulsions, and died in about fifteen minutes. He had had "'fits' several times before." The principal head-lesion was œdema of the brain. Case XXVI., styled *epilepsy* (p. 108), was seized with a fit followed by stupor and stertor. On the following day had "another attack of epileptiform convulsions," followed by coma, in which state he died. The principal head-lesion was œdema of the brain, with some dilatation of the vessels. In a foot-note on page 222 it is stated:

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[1] Rolands, "Archives Générale de Médecine," tome v., 1824. Also Collard de Martigny, ibid., tome xiv., pp. 205, 220. (*Vide American Journal Medical Sciences*, April, 1871, pp. 461, 462.)

[2] "Clinical Observations on Functional Nervous Diseases," second American edition, p. 138.

[3] "Diseases of the Nervous System," p. 94, foot-note.

[4] "Clinical Medicine," London edition, vol. i., p. 19, *et seq.*

[5] *Vide* Handfield Jones, *op. cit.*, p. 481.

"In epilepsy the condition of the cerebral circulation at the beginning of the fit is similar to that which obtains in at least some cases of nervous apoplexy. There is in both a state of cerebral anæmia, which is due to sudden spasm, of a tonic character, of the cerebral blood-vessels.. The objective symptoms also are the same in both, excepting the convulsive movements with which epilepsy is usually attended."

Yet the classic distinction is made, and the diagnosis is said to be "generally easy."

That carbonic acid has a direct intoxicating effect upon the brain is proved by the experiments of Rolands,[1] and of Collard de Martigny.[2] That an injury contusing the brain-substance will induce suspended animation cannot be denied. That suddenly-produced anæmia will paralyze the brain is also true. The etiology of the vaso-motor spasm in many cases of epilepsy is beyond our present means of determining; but, if we exclude those cases of secondary coma induced by intoxication by carbonic acid, and cases of injury, we have a perfect identity in the mechanism of the fit in both epilepsy and apoplexy.

In the causation of apoplexy, the author makes prominent the effect of the habitual use of alcohol and over-feeding. Heart-disease and kidney degenerations are supposed to have a causative relation to cerebral hæmorrhage. A causative relationship is shown to exist between pleuritis and cerebral embolism or thrombosis—acting, probably, by rendering the blood hyperinotic. The relationship between rheumatism and gout and apoplexy is also shown.

In discussing this latter relationship, this statement (p. 242) occurs: "Rheumatic chorea is not characterized by any structural lesion of the brain and spinal cord, that we are acquainted with, any more than idiopathic chorea is." Meigs and Pepper[1] have collected the results of the *post-mortem* examinations, in cases of chorea, of quite a number of observers, and sum up as follows:

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[1] *Vide* Handfield Jones, *op. cit.*, p. 481.

[2] Ibid.

"It appears, therefore, that, in a notable proportion of the cases upon record, positive organic disease of the brain, and especially in the form of softening, has been discovered."

The association of changes in the spinal cord and meninges, as well as changes in the normal structure of the heart, is also shown by them to be quite common.

In giving the large ratio of the cases of *infantile apoplexy*, the author does not take into account the large number of children under one year as compared with the number of adults of any given age.

Chapter IX. affords a very good account of "Pulmonary Apoplexy or Extravasation."

The account of apoplexy, viewed in its practical aspects, is first rate; the descriptions are clear, and the differentiation of the several varieties is well presented; so that the attentive perusal of the work cannot but prove "interesting and instructive" to the reader, as the preparation of it has been "to the author." The subject, discussed from a clinical standpoint, has necessitated some repetition, but no more, perhaps, than is calculated to leave a clear impression. Stress is laid upon treating the premonitory symptoms when they exist.

Chapter XI., on "Epidemic Cerebro-Spinal Meningitis," concludes the work, the author giving a very good description. It is very properly (according to our view) classed with the phlegmasiæ. Thirst is not mentioned as a symptom, which, in the cases[2] under our observation, was very marked. In the treatment, opium is recommended in accordance with the recommendation of the best authorities. Quinine is not spoken of with particular favor, but, so far as our experience is concerned, we have fancied that better success was obtained in those cases which were early cinchonized in connection with the administration of opium. Only tonic doses should be continued after the first twenty-four or forty-eight hours.

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[1] "Diseases of Children," pp. 551, 552.

[2] Occurring in Livingston County, New York.

Bromide of potassium has seemed to do good in a certain proportion of our cases.

In reporting Githen's statistics, we notice one little discrepancy: 161 cases are reported; of these 43 died, 87 recovered, and 43 were still under treatment with a hope of recovery. This would make the whole number 173.

Art. IV.—*The Student's Hand-book of the Practice of Medicine, designed for the Use of Students preparing for their Examination.* By H. Audrey Husband, M. B., M. C., M. R. C. S., L. S. A., member of the General Council of the University of Edinburgh, etc. Edinburgh: E. & S. Livingston, 1873.

This is a little book of short notes on the prominent features of each disease, and is intended to assist the student in concentrating and remembering the substance of what is gained from lectures and larger works. It is carefully prepared, and contains as much information as could possibly be given in so diminutive a volume, including hints on diagnosis, pathology, and treatment.

Art. V.—*Researches on the Action and Sounds of the Heart.* By George Patton, M. D. London: J. & A. Churchill, 1873, pp. 64.

The greater part of the contents of this volume has been published by the author in contributions to the *British Medical* and *Dublin Quarterly Journals.* The papers have been revised and much new matter added. The views advanced are based on numerous carefully-conducted experiments, from which the author arrives at the following conclusions regarding the sounds of the heart.

The first sound is produced by the contraction of the ventricle and impulse of the aorta. It commences as the blood is propelled with force through the aortic foramen, and attains its intensity in the aorta, as the blood is thrown back against the aortic valves and shuts them on the impulse being imparted to the wave.

The second sound depends on the contraction of the auricles, and is produced as they propel their blood with force through the auriculo-ventricular foramen into the ventricle, during its dilatation. It is produced by the force with which the blood is propelled by contraction of the auricle, through each auriculo-ventricular foramen, into the ventricles during their diastole.

BOOKS AND PAMPHLETS RECEIVED.—Contributions, consisting of Papers on Dermoid Tumor of the Cornea, an Additional Method for the Determination of Astigmatism, Removal of Cyst of the Iris by Operation. By George Strawbridge, M. D., Lecturer on Diseases of the Eye and Ear, in the University of Pennsylvania, etc. Philadelphia: Lindsay & Blakiston, 1873.

The Mechanism of the Ossicles of the Ear and Membrana Tympani. By H. Helmholtz, Professor of Physiology in the University of Berlin. Translated, with the Author's permission, by Albert H. Buck, M. D., and Normand Smith, M. D., of New York. With Twelve Illustrations. New York: William Wood & Co., 1873.

American Hand-book of Chemical and Physical Apparatus, Minerals, Fossils, Rare Chemicals, etc., imported or manufactured by E. B. Benjamin, No. 10 Barclay Street, New York. Illustrated, with prices.

A Treatise on the Causes of Heart Disease, with a Chapter on the Reason of its Prevalence in the Army. By Francis W. Mariet, M. D., F. R. C. P. E. Edinburgh: Bell & Bradfute, 1872.

Skin Grafting. By John Woodman, F. R. C. S., Consulting Surgeon to the Exeter Dispensary, etc., etc. Second edition, revised and enlarged. London: J. & A. Churchill, 1873. Pp. 31.

A New Method of treating Strictures of the Urethra, after External Section. By C. H. Mastin, M. D., Mobile, Ala. Louisville: Medical Journal Print, 1873. Pp. 39.

Transactions of the Obstetrical Society of London, vol. xiv. For the year 1872, with a List of Officers, Fellows, etc. London: Longmans, Green & Co., 1873.

The Treatment of Whooping-Cough with Quinine. By B. F. Dawson, M. D. New York: Wm. Wood & Co., 1873. Pp. 14.

Translations.

Injection of Uric Acid.—M. Gigot-Suard submitted to the Academy of Medicine, on the 21st of January, an interesting paper on this subject, of which we give a summary. Administered to dogs in doses of from twenty centigrammes to four grammes, in twenty-four hours, for a period varying from one to two months, uric acid produces morbid symptoms which are very remarkable and which may help to clear up the pathogeny of many chronic diseases. In several instances the alkalinity of the serum of the blood was diminished to the point of neutrality. The microscope and chemical analysis revealed the presence of crystals of uric acid, of oxalic acid, and of urate of soda. The organs and tissues on which the acid has shown its action are, in order of frequency: the skin, the mucous membranes and their glands, the lungs, the kidneys, the liver, the pancreas, the brain, the lymphatic glands, the articulations, the spleen, the pericardium, the spinal and cerebral meninges, and the heart.

The *skin* exhibited almost all the alterations described by dermatologists—erythema, papulæ, vesiculæ, pustulæ, and squamæ. The *mucous membranes* were more or less strongly congested, rarely softened. Most often affected were the membranes of the mouth, nose, eyes, and bronchi. The glands were hypertrophied and even ulcerated; but the last lesion was commonest in the glands and tubules of the rectum. The *lungs* were congested and hepatized, with or without apoplectic centres, to say nothing of tuberculization, which will be noticed presently. The maladies of the kidneys varied from simple congestion of the cortical substance to the characteristics of Bright's disease. The *liver* was several times congested, and once showed fatty degeneration. In the *pancreas* nothing was observed except a more or less extensive injection of its surface. The same was true of the *brain* where the injection affected only the surface and part of the gray substance. Cancerous and tuberculous degeneration appeared several times in the *lymphatic glands*. In other cases there was merely engorgement. In the *articulations* the only lesions remarked were, increase of the synovial fluid, deepening of the color of the cartilages, and injection of the synovial membranes. There were no deposits of urate of soda. Lesions of the spleen were rare, and consisted of nothing but injection and slight increase of color in some spots. In one case the spinal meninges and the pericardium were strongly injected. The *heart* was affected in but one case, the walls being enormously thickened, and the endocardium having a silvery look. Besides these organic lesions, there were, in one case, symptoms of diabetes; in three cases, pulmonary tuberculosis; in one, a woody scirrhous tumor of the skin on the neck; and in one an epithelioma on the tongue.—*Gazette Hebdomadaire*, January.

Experiments on a Guillotined Man.—In the Society of Biology, on the 11th of January, M. Onimus mentioned that he had had an opportunity to verify several physiological facts on the body of a man who had been guillotined. The external intercostals raise the ribs, the internal intercostals lower them, demonstrating the correctness of Bamberger's theory. The peronæus longus brings down the internal edge of the foot, at the same time acting to some extent as an extensor and abductor, as Duchenne has shown. The loss of contractility in the muscles takes place in the following order: The muscles of the tongue, the diaphragm, and those of the face, are the first to fail to react to electric excitement, though the masseter holds out a long time; in the limbs the extensors fail before the flexors; the muscles which preserve their excitability longest are those of the trunk. The form of muscular contraction varies as the contractility lessens. It is interesting to remark that the order in which the muscles become inactive is analogous to that of lead-paralysis.—*Gazette Hebdomadaire*, January.

Typhus during the Siege of Metz.—Dr. G. Viry asks: "Why did typhus spring up in the city but not in the French camps? Why did it not first attack the French soldiers who suffered most from want of bread and salt? Why did it commence in the city in the orphan asylums of St.-Joseph and

St.-Constance?" His reply is, that among the soldiers there was no crowding. They slept in tents outside the walls, and lived in the open air. The population within the walls, dense before the war, was augmented by the arrival of numerous families from the country, and by a great number of sick and wounded. The orphan asylums mentioned were particularly deficient in space. The hospital "Des Tabacs," where the fever showed itself, was appropriated to small-pox patients, and was very full. The Prussian soldiers, on the contrary, lived in barracks and houses, and suffered accordingly.—*Gazette Hebdomadaire*, January.

Structure of the Urethra, and Pathogeny of Stricture. (*Archiv für Klin. Chirurgie*, 1872.)—B. Stilling has demonstrated, by means of fresh preparations hardened in alcohol, that the corpora cavernosa and spongiosa are organic muscles, the fibres of which partly interlace horizontally and vertically, partly lie side by side. Into these intermuscular spaces, which only exist during erection, the branches of the pudic artery enter direct. The arteries of the corpora cavernosa are surrounded by smooth muscles, which are inserted into their walls at intervals; ordinarily, these muscles occupy but little space; their contraction aids the fibrous septa which run through the corpora cavernosa from the periphery. During erection, the venous reflux is prevented partly by the increased distention of the posterior cavernous portions (where the helicine arteries [Müller] enter), partly by the compression of the large veins which run between the corpora cavernosa and spongiosa, and of the peripheric veins, again, by the muscular distention of the arteries. Toward the urethra, the spaces are arranged closer together, and where the muscular fibres resolve themselves into separate bundles which are inserted into the mucous membrane of the urethra and control dilatation and contraction of the urethra during micturition. Provided these urethral muscles undergo fibrous degeneration in consequence of inflammation, they retract, and a stricture results. In consequence of the abnormal pressure of the degenerated portion of the urethral mucous membrane, the latter loses its epithelium and has a tendency to contract.—*Centralblatt f. d. Med. Wissch.*, January, 1873.

Miscellany.

Appointments, Honors, etc.—Prof. George F. Barker, who has occupied the chair of Physiological Chemistry and Toxicology in the Medical Department of Yale College, has been elected to the chair of Physics in the University of Pennsylvania. Governor Hartranft has appointed Dr. A. W. Matthews, of Media, to be Quarantine Master for the port of Philadelphia, in place of Dr. John H. Gihon, removed. Dr. H. D. Holton, of Brattleboro, is to deliver the course of lectures on Materia Medica in the Medical Department of the University of Vermont this spring. Herbert Gray Torrey, the only son of the late Dr. John Torrey, United States Assayer, has just been appointed to the position rendered vacant by the death of his father. The Hon. T. S. Faxton, of Utica, has recently given fifty thousand dollars for founding a hospital within the corporate limits of the place, to be known as "The Utica Faxton Hospital." Other donations of a liberal character, it is expected, will be added, to the amount of one hundred thousand dollars or more. The Faculty of the Pennsylvania College of Dentistry have determined not to admit hereafter any female students. The Boston University has voted to establish a school of Medicine, to be under the control of the practitioners of the homœopathic school of medicine. Medical Director Joseph Beale, U. S. Navy, has been appointed Inspector-General of Hospitals and Fleets, his duties to begin on April 1st. Robert L. Packard has been appointed Assistant Professor of Applied Chemistry in Bowdoin College. Herr Ritter von Mauthner has devoted the sum of two hundred and sixty thousand florins to the establishment of a hospital for children in Vienna. An anonymous benefactor recently dropped in at St. Peter's Hospital in London, and left with the secretary a donation of ten £1,000 Bank of England notes. The French Government has closed the Medical School of Montpellier entirely, owing to disturbance among the students.

Removal of a Needle from the Heart.—At a meeting of the Royal Medical and Chirurgical Society, held February 11th, George W. Callender, Surgeon to St. Bartholomew's Hospital, presented the history of a man who for nine days followed his ordinary occupation, in pain and with discomfort, having a needle fixed in the tissues at the apex of the heart. On the ninth day, in consequence of his statement, and in view of the pain he was suffering, an incision was made over the fifth intercostal space, and the broken eye of the needle was found on a level with the intercostal muscle. This extremity was seized, and the foreign body was withdrawn. The patient recovered without an unfavorable symptom. With this history, the exact position of the needle in the wall of the chest was given, as also that of its probable position in the heart; the movements of the foreign body, caused by those of the heart, being figured, and their measurements added. Mr. Callender said it was quite clear that the needle had passed into the heart; it passed through the intercostal muscles, and lodged in the heart, and swung as on a pivot, the intercostal muscles being the centre. Its movements were similar to those he had seen when experimenting on animals. It was interesting to notice, knowing how severe injuries to the heart are, how this man was able for nine days to continue at his work, only suffering from irritation of the intercostal nerves. He thought the pain the patient complained of when first he got up was due to nervousness. He could not say whether the needle passed into the muscular substance or into one of the cavities; he thought from its position and direction that it had passed into the former. He had not used a magnet for diagnosis in this case; he had done so lately on a child into whose knee-joint a needle had entered and been broken off; it did not succeed. He did not think much of its practical utility as a means of diagnosis.

University of New York.—The medical alumni of the University of New York were the first graduates of a medical college in this city to inaugurate annual dinners as a part of the workings of an association of graduates in medicine. Their second dinner was given at Delmonico's, on the 19th of November last. About sixty graduates were present, as well as many of the officers of the college, and representatives of other alumni associations, and of the medical press. A graduate of the medical department, Dr. Roosa, had been recently elected a member of the Council of the University, and this was hailed by the graduates as an evidence of a future closer relation between the medical college and the governing power. Speeches were made by Chancellor Crosby, John Taylor Johnston, Esq., Vice-President of the Council, Prof. C. R. Agnew, of the College of Physicians and Surgeons, Prof. Wm. T. Lusk, of Bellevue Hospital College, Dr. Leroy M. Yale, President of the Alumni Association of the latter-named college, and Profs. A. L. Loomis, H. S. Hewit, and Satterlee, of the University.

Graduates in Medicine for 1873.—We give below the number of graduates at the various medical colleges of which we have received reports:

Bellevue Hospital Medical College	167
Jefferson Medical College	149
College of Physicians and Surgeons, New York	104
University of Pennsylvania	99
Medical College of Ohio	92
University of New York	69
University of Nashville	68
Rush Medical College, Chicago	62
Miami Medical College, Ohio	57
Bowdoin College, Maine	50
Indiana State University	48
Georgetown Medical College	24
Columbia College, Washington	8
New England Female Medical College	8

Manhattan Eye and Ear Hospital.—From the third annual report of this institution we learn that since the hospital was opened, October 15, 1869, 6,069 patients have been treated, of whom 4,323 were suffering from diseases of the eye, 1,484 from diseases of the ear, and 31 from diseases of the throat. During the same period 1,158 operations have been performed upon the eye, and 116 upon the ear.

Veteran Practitioners.—An entertainment was given in Pittsburg, on March 5th, in honor of Dr. George McCook, who is about to retire from the practice of the medical profession, of which he has been an active member for a period of fifty-seven years. There were some thirty medical gentlemen in attendance. Dr. McCook is in his seventy-eighth year. He removes to New Lisbon, Ohio, where he spent his earlier years. Dr. Joseph L. Stevens has been a practising physician in Castine, Me., for about sixty-five years, and daily attends to the duties of his profession.

Munificent Bequest for Hospital Purposes.—Mr. Johns Hopkins, of Baltimore, recently deeded to trustees thirteen acres of land in that city for the erection of a hospital, for the relief of indigent sick and orphans. At a meeting of the board of trustees, March 11th, they were notified by Mr. Hopkins that he had further dedicated $2,000,000 worth of property for the support and maintenance of the hospital. The hospital buildings will be on a magnificent scale, and the erection will be begun in the spring of 1874.

Academy of Medicine.—At the stated meeting, May 1st, Dr. C. E. Brown-Séquard will read a paper "On the Importance of Frequent Auscultation and Percussion of the Chest in Cases of Organic Brain-Diseases."

At the stated meeting, May 15th, Dr. Charles P. Russell will read a paper "On the Mortality in the Various States of the Union."

The Late Lord Lytton.—The distinguished novelist, in a document addressed to his legal representatives, stipulated that, after death, or presumed death, his body should lie untouched three days on the bed on which he died; and that thereafter medical men should examine him to ascertain that he was really dead, and, if so, to certify accordingly.

More Bogus Diplomas.—"It has just come to light," says the *Lancet* of March 22, 1873, "that during the last few years a large trade has been going on in forged diplomas purporting to be from the German University of Marburg, no less than forty persons in this country having purchased the worthless documents."

Harvard Medical College.—We direct attention to the announcement in our advertising columns of the recent changes in the course of instruction in the Medical Department of Harvard College. There are no signs of faltering in the good work that has been inaugurated in that institution.

Normal Ovariotomy.—The *Medical and Surgical Reporter* learns from a correspondent in Georgia that Dr. Battey's extirpation of the normal ovaries is a failure. The menstrual molimen and sanguineous discharge, with great suffering, still occur monthly.

The Practitioner.—It is announced that this valuable journal will appear this month in an enlarged shape, with sixteen additional pages, devoted entirely to hygienic questions. The support of distinguished authorities is promised.

The University of London.—Greek is no longer compulsory on candidates at the matriculation examination, and is now ranked as optional with French and German. This regulation, passed on the 12th inst., takes effect at the matriculation examination in June next. Of course the senate is the best authority as to what should be expected from the students, but there is one point of which we should like our readers to take note. Greek has been discouraged on the ground that no candidate can possibly acquire more than a smattering of it before matriculation, and that it is cruel to exact from him an acquisition which, small as it is, he will, in nine cases out of ten, abandon as soon as he has passed in it. If by this argument it is implied that the French and German, which have been made optional with the Greek, are, in any strict sense, more easy of acquisition or more advantageous for the candidate, we demur. It is at best but a smattering of the modern languages which the candidate for matriculation brings up with him, enabling him to make as little use of Trousseau or Virchow as his little Latin or Greek avails him for Celsus or Hippocrates. All that the advocates for the retention of Greek contended for was this: that medico-scientific terms would be more intelligible to him with a smattering of Greek than with any amount of French and German; that these languages would be more quickly and thoroughly acquired with the previous smattering of Greek than without it; and that, whether he abandoned Greek after the matriculation or not, a foundation was secured which would enable him to add whatever superstructure to it he had time or inclination for. Improved methods and manuals of tuition, moreover, are yearly making Greek an easier accomplishment. But it is useless to cry over spilt nectar.—*Lancet*, February 22, 1873.

The Reflex Movements of the Uterus.—Dr. Schlesinger, continuing his experiments formerly undertaken in conjunction with Dr. Oser, states (*Wien. Med. Jahrb.*, 1873, Band ii., Heft 4) that electrical excitation of the central end of a spinal nerve calls forth, in from five to fifteen seconds, energetic contractions of the uterus. If artificial respiration be maintained in a curarized rabbit on which tracheotomy has also been performed, the uterus (as the older experiments when the centres were irritated also showed) was violently contracted. The same energetic contraction also occurred when the central end of the divided median or crural nerve was electrically irritated. The transformation of this reflex action (to which category the uterine movements on stimulation of the nipples also belong) is not affected through or by means of the spinal cord; for, when the medulla of a rabbit, prepared as above, was divided between the atlas and occipital bone, irritation of a nerve-trunk, lasting for forty seconds, was without effect. Schlesinger has arrived at the conclusion that the path by which the excitation issuing from the brain reached the uterus was certainly in part through the nerve-plexus surrounding the aorta, but in part also through other, though not yet satisfactorily demonstrated, channels.—*Lancet.*

Obituary.

Dr. Josiah Clark Nott, recently practising in this city, died in Mobile, March 31st, on the sixty-ninth anniversary of his birthday. Dr. Nott was born in South Carolina, and graduated in medicine at the University of Pennsylvania, in 1827. He had filled the position of Professor of Anatomy in the University of Louisiana, and of Surgery in the Medical College of Alabama, and enjoyed a high reputation throughout the South as a surgeon. He was well known both at home and abroad by his contributions to medical and general literature, and was one of the authors of "Types of Mankind," an ethnological work of great value. He was an earnest and active member of his chosen profession until within a few months of the close of a long and useful life.

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ART. I.—*The Etiology and Indications for Treatment of Irregular Uterine Action during Labor.* By WILLIAM T. LUSK, M. D., Professor of Obstetrics and Diseases of Infancy, Bellevue Hospital Medical College.

IT seems almost like presumption to invite the attention of the profession anew to a subject apparently so well settled as the causation of irregular uterine action during labor. Under the different titles of rigid os, hour-glass contraction, and the like, they are familiar enough, and our standard authors furnish for each of these conditions severally an accepted explanation.

But there is nothing so firmly established in medical science as to preclude our instituting, from time to time, fresh inquiry as to whether all that is taught as sound doctrine upon any given subject has really a firm foundation in anatomy, physiology, and practical experience.

I must confess to owing much that is satisfactory to my own mind, in connection with the theory of labor, to the teachings of the late Professor Seyfert, of Prague; who, confining himself almost entirely to oral teaching, it is to be regretted has left few permanent memorials of his labors behind. Yet among the obstetricians of the present century none deserve to rank higher than this comparatively little known successor to the chair of the great Kiwisch. Many things which he taught a few years ago, and which were then regarded as wildly heterodox, have since been accepted as welcome additions to our stock of ideas. His intolerant, dogmatic spirit, his utter lack of fairness toward those who differed from him, together with the absence of any published exposition of his doctrines, have, however, combined to prevent his receiving that acknowledgment to which the originality of his teachings justly entitled him.

To avoid confusion, I propose using in the following discussion the term "labor-pains" in the sense of uterine contractions, a distinction made necessary in our language by the frequency with which we hear it stated that women are having strong "pains," when upon examination we find only a feeble measure of uterine contraction, the word "pains" evidently here signifying nothing more than an unduly severe amount of physical suffering.

As examples of irregular uterine action writers distinguish pains in excess, deficient pains, cramps of the uterus, and the various forms of stricture. Regarding the etiology of these conditions, I would beg to be allowed to express my convictions with a certain degree of positiveness, not with any pretence at infallibility, but simply to define the limits of the discussion. Every busy man will find in the ordinary events of his own practice the sort of evidence best qualified for verifying or disproving the opinions I shall endeavor to maintain.

Notwithstanding the picturesque descriptions that have been given of excessive pains, the question is worth considering whether the uterus ever acts with such an undue degree of energy as *per se* to constitute a pathological condition. In cases of obstruction to the passage of the child, strong pains may indeed become a source of danger, though even here, as was long ago pointed out by the sharpsighted Michaelis, their action is oftentimes beneficial. "Suppose," he says, "they do frequently exceed, in cases of contracted pelvis, the limit consistent with safety, they are not to be looked upon on that account as altogether unnatural, for the difficulty of delivery is here not to be overcome without danger, and in the strong pains we have in our possession always the least dangerous means of ending the labor."

But, with regard to precipitate labors as a consequence of excessive uterine action, are they not to be regarded with apprehension? Precipitate labors are not very uncommon at Bellevue Hospital. I have never noticed any thing peculiarly unfavorable in their action. Not long ago, on a Sunday, a woman was attending divine service in the chapel of the hospital. She felt the first labor-pain, and hastened at once to the lying-in ward. When she reached the top of the staircase leading to the ward, she was obliged to lie down, and in a moment more the child was born. Both the mother and child did perfectly well. Now, it is difficult to see why this woman was not to be regarded as really highly favored. But, says a recent writer:[1] "The consequences of this state of things are sometimes very serious to the child, for it has been thrown suddenly on the floor, the cord ruptured, and the child much injured." In this harrowing picture the tragic consequences of the rupture of the cord especially affect our sensibilities. "But," he adds, "the dangers to which this unnatural action exposes the mother are even more serious; for prolapsus and inversio uteri, laceration of uterus, vagina, and perinæum, hæmorrhage, syncope from the sudden emptying of the uterus, and subcutaneous emphysema of the head and neck from the violent straining, have been the result." It is hard, in this category of ills, to see how inversion or prolapsus of the uterus is likely to result from its own excessive action; and while the occurrence of laceration is not denied, even in this case there is reason to question the propriety of laying the blame upon the uterus. It is the common experience that, when the expulsive pains are good, the tissues rapidly soften. The last sentence in the paragraph quoted probably furnishes the key to the real source of danger. It is to the violent straining that the accidents enumerated are really attributable. They occur in women who possess an undue degree of reflex irritability, which impels them to excessive use of the diaphragm and abdominal muscles. These cases do not call for bleeding, but for the subcutaneous injection of morphia, or, best of all, the production of complete anæsthesia by chloroform, so as to suspend the action of the voluntary muscles.

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[1] Meadows, "Manual of Midwifery," p. 295. Lindsay & Blakiston, 1872.

Too weak pains are unquestionably oftentimes pathological, but here even we need to discriminate. Under the title of "Symptoms of Primary Weakness of Pains,"[1] Scanzoni describes a condition which surely gives rise to no apprehensions, and, in consequence, should properly find its place not in the pathology, but among the varieties of normal labor. The patient is represented as suffering from obscure disagreeable sensations in the lower abdomen, which rarely rise to the dignity of pains, and which interfere neither with sleeping, eating, nor the due performance of household duties. Yet under their influence the os dilates, the membranes form, and even rupture. "The absence of all febrile movement," says Scanzoni, "and the entire quietude of the woman, would lead a superficial observer to disbelieve that she had been long engaged in labor." Experience teaches us that, in these cases, we do best when we imitate in practice the imbecility of the superficial observer, and treat our patient as though she were precisely what she appears to be, viz., a pregnant woman. Let her eat, drink, and sleep, as usual. Even when the waters have passed away, so long as the uterus remains slack, and does not compress the fœtus, neither mother nor child is endangered. One case I knew where twelve days elapsed between the rupture of the membranes and the birth of a healthy living child. Old practitioners, as a rule in such cases, wisely abide the event undisturbed, but my intercourse with younger men enables me to know how strong the disposition is to lend an ear to the importunities of anxious friends "to do something," and to resort to the by no means indifferent use of oxytocics.

A pathological weakness of pains, i. e., where the weakness is a source of danger to both mother and child, occurs rarely, except as secondary to, or complicated by, other conditions, which first claim our attention.

Among the causes of difficult labor, especial stress is often laid upon strictures of different parts of the uterus. Thus we have in head-presentations, most frequently, stricture of the os externum, in breech cases, stricture of the os internum clasping usually the neck of the child after the passage of the shoulder, and in the third stage of labor the stricture known as hour-glass contraction. These strictures are usually described as though they were due to the isolated action of special circular bands of muscular fibres at the points at which the strictures occur. However, revolutionary as it may seem, there is tolerably good ground for questioning the pretty generally accepted opinion that in the independent action of the circular, oblique, and longitudinal layers of muscular fibres, which may be demonstrated in the pregnant uterus, we have furnished us the key to these forms of abnormal uterine action. The existence of such layers is not of course denied, but their importance has unquestionably been greatly exaggerated by the desire of the anatomist to answer the questions of the obstetrician.

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[1] "Lehrbuch der Geburtshülfe," 4te Auflage, S. 241.

For instance, firstly, the superficial layer, whose fibres run both in a transverse and oblique direction, and which covers the uterus like a hood, possesses in the freshly-delivered uterus an almost membranous thinness, so that it is hardly conceivable how it could have played any very active *rôle* in the expulsion of the ovum.

We have, secondly, an inner layer composed of circular fibres, continuous with the circular fibres of the Fallopian tubes above and those of the vagina below. These fibres are a reminiscence of the early development of both uterus and vagina from the filaments of Müller. At the os externum, and the os internum, they are somewhat more abundant, and constitute the so-called "sphincters" of those localities. Now, it is not probable that these circular fibres possess any more functional importance in the uterus than they do in the vagina, yet I hardly think any one would invoke spasmodic stricture of the vagina proper as a cause of dystocia.

The median layer constitutes the great bulk of the uterine walls, and is composed of longitudinal and transverse fibres, which in place of being arranged in distinct layers, as is the rule in other hollow muscles, form an intricate interlacement, in the meshes of which are contained the vessels of the organ. It is certainly the contractions of this portion of the muscular walls which exercise during labor the preponderating influence in the expulsion of the contents of the uterus. The longitudinal bundles are partly derived from the lower transverse fibres, and pass downward to become continuous with the longitudinal fibres of the vagina; and, in part, are longitudinal from the beginning, but are closely interwoven with the transverse fibres. As they pass down into the cervix, they gradually diminish in bulk, and there either interweave with the sphincters, or terminate by fine processes in the connective tissue, directly underlying the mucous membrane of the vaginal portion.

The action of a muscle thus constituted would be to exercise concentric pressure upon its contents, and in some measure, perhaps, to withdraw its lower segment up over the body to be expelled. There is strong *a priori* reason to doubt whether the uterus during labor ever contracts except in its totality. The evidence to the contrary in the case of the so-called strictures is more apparent than real. Take, for instance, the stricture of the os externum. The tardy dilatation may be due to such exceptional conditions as cancerous infiltration, firm adhesion of the membranes to the os internum, and, perhaps, to old cicatrices of the cervix. Again, in cases where there is loss of parallelism between the axis of the uterus and the axis of the superior strait, the presenting part may by bearing especially upon the anterior portion of the cervix, and the lower segment of the uterus, exercise so little pressure upon the os that its sphincter long maintains its integrity. But, aside from such instances as these, it is matter for consideration whether all the pretended strictures of the os, instead of being due to spasm, are not dependent upon insufficient uterine action. I do not mean to state that such a supposition will satisfactorily account for all that has been seen by others. It certainly has been true of all the cases that I personally have met with in private and hospital practice. Persons often speak of the pains being strong, but affirm that labor does not progress on account of the resistance offered by a firm catgut-like band at the uterine orifice. I have often met with this condition, but have failed to ever find it associated with good pains of a markedly expulsive character. The patient usually gives expression to an intense degree of suffering, but intense suffering is the constant accompaniment of weak pains and prolonged labor, where the uterus presses upon or is pressed upon by its contents for any considerable period of time. In the condition under consideration, we would hesitate to forcibly introduce the hand into the uterus, not because of the difficulty of introduction, but because of the danger of laceration. Now, were really good pains associated with this form of rigid os, the same danger would be incurred by pressure from above. Instead of the os arresting the expulsion of the fœtus, it would be torn through in most instances like so much paper. As a matter of fact this does not take place, because, under the influence of strong pains, the os rapidly loses its catgut-like feel, and softening and expansion occur simultaneously. Sometimes the cervix is both thick and hard, so that it has been compared to a band of iron. With more show of reason such a condition has been invoked to account for the retardation of labor. Yet it is difficult to reconcile with this view the facile disappearance of rigidity under the influence of properly directed pressure, as, for instance, when the Barnes dilator is employed in cases calling for the speedy termination of labor. All have occasion at times to notice the speedy dilatation of the rigid os after rupture of the membranes. The following case will serve as an illustration:

Mary Brown, primipara, aged twenty, came up to the lying-in ward of the Bellevue Hospital, at 7 P. M., on the 10th of November. She said that for three or four days she had suffered severe pain in the back and abdomen. On examination the os was found sufficiently dilated to admit one finger. As she had suffered much pain during the night, Dr. Swan, the house-physician in attendance, gave her toward morning ℨij of the solution of morphia (U. S. Pharmacopœia), which afforded some relief. As there was no change in the cervix, Dr. Swan applied the warm douche for twenty minutes. The cervix, which before had been soft and supple, expanded somewhat, but now became hard and rigid. This condition remained unchanged during the day. For the pain chloroform was administered several times, with only temporary relief. At 10 A. M. an hypodermic injection of viij ♏. of Magendie's solution was given. Between 12 M. and 7.30 P. M. thirty-five drops more were administered subcutaneously in three injections. As the patient's sufferings remained unabated I was sent for, and reached the hospital between 8 and 9 o'clock. As I was engaged in making a vaginal examination, the membranes ruptured. In ten minutes' time the cervix, which had all day been about the size of a half-dollar, was fully dilated. In three-quarters of an hour more a child was delivered stillborn, which was partially resuscitated, but its death took place after three hours. Immediately after the birth of the child, the mother sank into a sound sleep. Now, this history appears to have but one interpretation. Owing to a relative surplus of amniotic fluid, and the tense state of the membranes, the concentric pressure exercised upon the ovum was wasted upon the periphery, without giving rise to the formation of a bag of waters. The pains, therefore, proved unavailing and became feebler and feebler. After the use of the douche, the uterus passed into a state of tonic contraction, the condition of the cervix affording an index of the condition of the entire uterus, in much the same way as a furred tongue bespeaks a catarrhal condition of the stomach. The mother suffered constant pain, and the exaggerations of the pains at short intervals might have led one to suppose that she was having severe pains of an expulsive character, which were rendered unavailing by the rigidity of the os. The almost instantaneous relaxation of the cervix, after rupture of the membranes and the advent of true pains, should guard against such an error.

It is to be borne in mind that the dilatation of the cervix is not simply a matter of mechanical distention. In easy labors the cervix undergoes a series of physiological changes not only during labor, but sometimes for hours previous, which are of very great importance. These consist of an hyperæmic condition of the parts, of a serous infiltration separating the muscular fibres from one another, and in an increased secretion of mucus, whereby the cervix becomes softened and yielding. Now, the activity with which these organic changes occur stand in intimate relation to the activity of the uterine contractions. But this relation is much more marked in primiparæ than in multiparæ. In fact, in multiparæ we sometimes find a complete softening, and a fully dilatable condition of the cervix induced by contractions, which have hardly excited the notice of the woman. In primiparæ, on the contrary, while good pains, under otherwise normal conditions, certainly induce softening of the cervix, weak pains effect no changes in its tissues. Thus we see that pains which may be good enough to accomplish the organic changes in the cervix in multiparæ, may be utterly inadequate for the same purpose in primiparæ. I think it is losing sight of this comparative difference which has led observers so commonly to attribute to the "rigid os" of the primiparæ the blame that properly attaches to the relatively insufficient uterine action.

In the treatment of this affection there is no occasion to resort to bleeding, to tartar-emetic, or to plastering the cervix with belladonna-ointment. In the course of time the tonic contraction generally disappears of itself. But while it lasts the patient's condition is one of acute suffering. To allay this suffering we are frequently called upon to use morphia either by the mouth or hypodermically. Opiates often accomplish wonders in one of two ways. Owing to the prolongation of the labor, and its attendant pain, the patient's nervous energies have become exhausted. The arrest of the pain enables the woman to sleep, and, with the recuperation of power that comes upon awakening, good pains follow which bring the labor to a happy termination. In other cases, after the employment of opium, or the administration of an anæsthetic, the parts apparently relax, and an acceleration of labor follows. Opium, when it produces this effect, has been regarded as an oxytocic. Now, in these cases we have first the arrest of pain, then the occurrence of regular uterine action, and as a consequence the rigid os yields. It is possible that the beneficial effect of the anodyne or anæsthetic is due directly to its quieting action upon the spinal nerves. The uterus derives its motor nerves chiefly from the sympathetic system. When from disease of the spinal cord there is total paralysis of the lower extremities and bladder, labor has been known to proceed undisturbed.[1] It has been surmised[2] that the nerves of the uterus derived from the cerebro-spinal system possess inhibitory properties. Of course, we are here resorting in part to theory, but, if it be true, it readily explains how severe pain may suspend uterine action, and how the tranquillizing of pain would restore to the motor nerves their full energy.

In cases where anodynes and anæsthetics fail us, we have seen how favorable results may occur from rupture of the membranes.

On some occasions we find, on examination, the cervix partially dilated, a segment of the head presenting, but the cervix continues hard and unyielding. The patient is noisy, and screams out with every pain. Now, in a number of instances, I have had an opportunity to demonstrate in the presence of the members of the hospital staff the speedy disappearance of all rigidity, with complete dilatation, by simply asking the woman to hold her breath, and reënforce the uterine pains by the action of the auxiliary muscles. With my finger upon the cervix I have known a very few pains, thus reinforced, to put an end to a long period of delay and suffering.

In all cases where we desire to quickly overcome rigidity, or where other methods have proved inffectual, we possess a certain means in the use of the Barnes dilator, which acts most beneficially by both the mechanical pressure it exercises on the cervix, and by stimulating the dormant energies of the uterus.

But we cannot proceed further with our subject without laying down some distinction between good pains and those of an opposite character. This is not quite so simple as might at first appear. Good pains have nothing to do with mere frequency, or the suffering of which they are the source.

In every pain we have alternating contraction and relaxation of the uterine muscular fibres. In good pains the excursions thus formed need to possess a certain degree of amplitude. When the excursions are short, and the pains at the same time strong, they give rise to clonic uterine contractions. When the excursions are absent, and are replaced by a hardening of the uterus which closely compresses its contents, even in the intervals of the pains, we have the condition to which we have given the name of tonic contraction. Where there is any obstacle to delivery, these conditions may pass by insensible gradations into one another. The transition from weak pains to a state of tonic contraction is common in primiparæ, in cases where, from hydro-amnion, twin-pregnancy, or other causes, the uterus is overdistended, or where, from any reason, the efforts of the uterus are unavailing to expel its contents. Sometimes, following a state of prolonged tonic contraction, after the evacuation of the uterus, its walls collapse like those of a pricked bladder. The stage of exhaustion or paralysis has been reached.

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[1] Frankenhauser, "Die Nerven der Gebärmutter," p. 47. June, 1870.

[2] Schroeder, "Lehrbuch der Geburtshülfe," 2te Auflage, S. 99. Frankenhauser, *l. c.*

As explanatory of these several conditions we need to bear in mind what is often lost sight of in the earlier stages of labor, that the uterus, in addition to contractility, likewise possesses retractile properties. These are shown in a very marked way by the manner in which the uterus closes upon its contents after the rupture of the membranes; so, too, by the manner in which the uterus follows down the fœtus during the period of expulsion. But even before the rupture of the membranes the same retractile disposition manifests itself. Normally the gradual closure of the uterus upon the ovum leads with a dilated os, to the permanent formation of the bag of waters. When from any reason the cervix does not dilate, as the uterus retracts, the excursions made by the labor-pains shorten, which thus, when strong, assume the clonic form. The same process leads finally to the close investment of the ovum by the uterus, when the only indication of contractility which remains is the increased hardening of the uterus at short intervals. Pains of this kind have lost all their expulsive character. Yet they are not unfrequently described as "good," and the delay attributed to a rigid os. In a similar condition of the uterus, when the head is on the floor of the pelvis, the arrest is oftentimes attributed to a rigid perinæum. But it is a matter of every-day experience that with really good pains the perinæum speedily loses its rigidity. Of course it is not denied that, in primiparæ, the organic changes which effect the softening of the perinæum need for their accomplishment relatively stronger pains than in multiparæ. The weak pains which are the concomitants of a rigid perinæum are reënforced in some primiparæ by the energetic action of the abdominal muscles. Then if rigidity persists, the perinæum commonly tears instead of impeding labor. To the same retractile properties of the uterus are to be ascribed the irregular pains so common in cross-births, and contracted pelvis.

In somewhat rare cases, after the head has travelled through the cervix, the entire uterus passes into a state of tonic contraction. The fibres which embrace the child's neck may prevent the advance of the shoulders. We then have what is termed stricture of the os internum. It is not due to the spasm of any special bundle of circular fibres, but the uterus, as it retracts upon its contents, becomes conformed to the irregularities of the fœtus. The small size of the child's neck permits a more complete retraction of the muscular fibres at that point. This anomaly occurs, however, much more frequently in pelvic births after the passage of the shoulders. In head-presentations we should not use forceps, nor in breech-deliveries should we resort to forcible attempts at extraction. In either case the indication is to excite expulsive pains, and this is best fulfilled by kneading and compressing the uterus, seeking thus by a *vis-a-tergo* to overcome the constriction.

After labor is completed, the tonic contraction, or, more properly, retraction of the uterus, is the safeguard Nature sets up against hæmorrhage. As a result of the abuse of ergot, or, in other cases, from an abnormal adherence of the placenta, the stage of tonic contraction may be reached before the expulsion of the placenta. A somewhat exaggerated form of this condition produces the familiar hour-glass contraction. In the body of the uterus complete retraction is prevented by the presence of the placental mass. Near the os internum, as there is no obstacle to the retraction of the muscular fibres, a constriction results; while below, the cervix, as is usual following confinement, has a funnel-shape, and hangs loosely in the vagina. In general terms, then, the hour-glass form may be said to be due to tonic retraction of the uterus proper combined with a sub-paralytic condition of the cervix. Usually following confinement the tonic condition is at first intermittent, and followed by periods of relaxation. In hour-glass contraction the tonicity is for a long time persistent. As hæmorrhage is rare, we await the final relaxation of the uterus and expulsion of the placenta, which is accomplished by the recurrence of pains of a normal character.

It is not, however, altogether safe to leave our patient before this termination has been reached, for, exceptionally, the muscular fibres of the body of the uterus may relax prior to those of the lower segment, and thus hæmorrhage may result. Injections of ice-cold water in such cases not only restrain the hæmorrhage, but induce oftentimes a regular expulsive uterine action. So soon as a portion of the placenta can be reached by the fingers introduced into the vagina, we may hope by gentle manipulations to gradually effect its removal. I am now convinced that rarely if ever are we called upon to deliver the placenta in hour-glass contraction by force.

In most of the abnormal conditions heretofore mentioned we have called attention to the coexistence of excessive pain, and have noticed the connection between intolerable pain and long-continued reciprocal pressure between the uterus and its contents.

But acute suffering sometimes attends upon the preliminary stages of labor. In the latter days of pregnancy in the primipara, and for a few hours preceding the advent of true labor-pains in multiparæ, contractions occur, which normally scarcely attract the attention of the patient. In rare instances, however, the suffering they occasion is intense. Hysterical women suffer in this way, from pains, which would not be noticed by others, and for their relief it becomes necessary to resort to such palliatives as warm baths, opium, and chloroform in small doses.

But even where hysteria does not exist as a cause, the pains may be so severe, while the cervix has still its normal length, that the woman believes herself in labor, and, indeed, the contractions are really as painful as in actual labor. There are no febrile symptoms indicative of an inflammatory condition of the uterus and its appendages. The pain is like that in the rheumatism of a muscle. Though the term rheumatism of the uterus is applied to this condition, its pathology is uncertain. Indeed, in reading the ordinary descriptions given of it, it is hard to resist the conclusion that the writers have confounded together a number of distinct affections, such as hysterical hyperæsthesia, intestinal irritability, and early stages of inflammation. Seyfert declares it to be due to deficient elasticity of the peritoneal covering of the uterus, resulting from preëxisting peritoneal inflammation. Practically important is the disappearance of these pains upon the induction of intense diaphoresis. We have seen patients, who have been treated for days by hypodermic injections of morphia, with only moderate results, relieved as if by magic, by placing them in a warm bath, and then covering them with blankets, giving in addition hot drinks and Dover's powder, until they became bathed in abundant perspiration.

It is often difficult, toward the close of pregnancy, to distinguish between the colic pains due to fecal accumulation, or the presence of gases in the stomach and intestines, troubles to which pregnant women are especially disposed, and uterine contractions of a painful character. Indeed, in the former case the uterus becomes involved to some extent, so that the cervix is often felt, during one of these cramps, to simultaneously harden. Moreover, after labor has actually begun, it may become complicated by colic-pains, which exercise in turn a suspensive influence upon parturition. But the colic-pains are themselves intermittent, and are, therefore, liable to be mistaken for labor-pains. Thus we may become involved in perplexities which time alone can solve. Even when we have made out our diagnosis of "false labor-pains," and give an opiate for the relief of our patient, we never can be quite sure that the first result of quieting the pain may not prove the acceleration of labor. Where this does not occur, we should guard against the return of the trouble by clearing out the bowels either by purgatives or enemata.

In normal labors the pulse becomes more rapid at the beginning of each pain, and continues to increase in frequency until the pain has reached its acme, when a gradual declination follows. But sometimes labor is attended by marked febrile symptoms. There exists not only rapidity of pulse during the intervals of the pains, but a continuous elevation of temperature. Now, if at the same time the uterine contractions are the source of extraordinary suffering, there is strong reason for suspecting that the labor is complicated by inflammatory conditions of the organs concerned in parturition. Thus a latent pelvi-peritonitis may be converted into the acute form by the several acts which comprise an ordinary labor, or the prolonged tonic contraction of the uterus upon the fœtus after the rupture of the membranes, especially in neglected shoulder presentations and in contracted pelves, may give rise to inflammatory conditions of the uterus itself. In either case the association of febrile symptoms with intense pain should awaken serious apprehension. Especially ought we to be forewarned against the indulgence of a sense of false security, because of the treacherous lull in the symptoms that, as a rule, takes place when the labor is at an end. After a day or two we may expect a chill and the return of the fever. In these early stages of metritic and pelvi-metritic trouble there is little question as to the value of mild purgatives. A ten-grain dose of calomel has oftentimes a most beneficent action in arresting the disease. Where the advance of labor renders the induction of artificial diarrhœa impracticable, opiate clysters, though of inferior value, soothe the pain and are our next most valuable resource.

And now to recur once more to the subject of weak pains. In all cases the strength of the pains must be proportioned to the obstacles to be overcome. Only then are they to be regarded as too weak when they prove inadequate to accomplish delivery without detriment either to the mother, to the child, or to both.

Previous to the rupture of the membranes the existence of weakness of pains can hardly be determined. Only after rupture are we in a condition to recognize the presence of primary weakness. Primary weakness becomes dangerous when the uterus, instead of exercising expulsive action, retracts upon its contents so as to closely invest the fœtus. In such a case the child's life is compromised both by pressure and by interference with the utero-placental circulation.

Secondary weakness results where an obstacle exists which the pains prove ineffectual to overcome. As in primary weakness, this condition may be attended with risk to the life of the child, and with suffering to the mother.

In these cases, unless relief is afforded by art, there is the special danger that the long continuance of the pressure may lead to inflammatory troubles, which will influence unfavoraly the puerperal state.

Lastly, the prolonged retraction of the uterus may be followed by the entire cessation of the pains, and thus paralysis result. Uterine retractility is not precisely the same force as that which causes the expulsion of a fluid from an over-distended elastic bladder, for retractility and contractility are in the uterus rarely disassociated from one another. When the uterus ceases to contract, it forfeits, in the rule, its retractile properties likewise.[1]

In the treatment of a pathological weakness of pains we have one of two courses open to us. We may either effect delivery by resorting to a judiciously-selected operative procedure, or, by applying the whip and the spur, we may seek to compel the uterus to perform its proper functions. Both from training and inclination, I prefer in most, if not all cases, to adopt the first alternative. Yet I am not quite ready to deny that ergot may be profitably employed for primary weakness, at even an early stage of labor. The efficacy of uterine action is more nearly related to the innervation than to the muscular development of the organ. In cases of defective nervous power, ergot perhaps may have a wider application as a remedy than is at present assigned to it. Most that has been written regarding its use relates to its administration in large doses. I desire here simply to mention the fact that I have seen small doses of ergotine given in the Prague Hospital with the view to awaken such a degree of uterine activity as would suffice to bring about the moulding of the head in a moderately-contracted pelvis.[2] The ordinary formula consisted of—

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[1] *Vide* Breisky, "Ueber die Behandlung der puerperalen Blutungen." (Volkmann's Sammlung klinische Vorträge, No. 14, p. 92.)

[2] Summer, 1865.

℞. Ergotine ℈j.
Tinctura cinnamomi et syr. simpl. āā ℥j.
M. et sig. Teaspoonful every three or four hours.

In these doses it appeared to produce good results, and certainly did no harm, unless, perhaps, by leading to the postponement of a more vigorous line of treatment.

Some mention ought perhaps to be made here of a plan for supplementing weak pains that has been long employed by practitioners, but for which the rules have been more recently formulated by Kristeller, consisting of regulated pressure made through the abdominal walls upon the fundus uteri. This method, to which Kristeller has given the name of *expressio fœtus*, in some cases enables us to bring about delivery without the employment of an extractive force. Yet the number of such cases is limited, and its principal application will always, it is likely, be found as a support to other operative procedures belonging to midwifery. Those who are not accustomed to resort to this plan will be astonished, upon trial, to find how much a scientifically-applied *vis-a-tergo* facilitates forceps-deliveries, and extraction following versions.

In conclusion, I have only to add that, while I, of course, expect that many recollections will occur to members of this Society which seem at variance with some of the views here presented, I feel at the same time confident that, if, in future, they carry the principles I have enunciated with them to the bedside, they will find them in close accordance with sober, careful observation.

ART. II.—*Progressive Myopia and its Operative Cure.* By RICHARD H. DERBY, M. D., Ophthalmic Surgeon to the Demilt Dispensary; late Assistant of Prof. von Graefe in Berlin.

IT is not uncommon to hear from near-sighted people the belief expressed that their eyes are stronger than those that can see well in the distance. They are able to recognize very minute objects by weak light, and they congratulate themselves that at the time of life when others need a convex glass for reading, they will be able to work with ease without any glass.

How utterly without foundation this so generally-accepted prejudice is, I shall endeavor to show in the course of this paper.

We must distinguish between two forms of near-sightedness. The one has been called stationary, the other progressive myopia. In the former the near sight remains unchanged. With the proper glass, distant objects are seen distinctly, near objects are clearly seen without any glass, and the near-sight does not increase in degree. Indeed, between the fortieth and fiftieth year, when the power of accommodation becomes less, there is an apparent diminution in the amount of the myopia. These cases are the exceptions. The progressive myopia is a very different affection. It is a disease, and a disease fraught with many dangers to the eye. In the near-sighted eye there is more than a simple error of refraction. Its optical character may lie in this; its anatomical lies in a distention of the eye and increased length of its visual axis, and this depends upon a pathological distention of its membranes. When this distention has reached a certain point, the membranes become attenuated, and their power of resistance so much diminished, that the distention no longer remains stationary, especially as the intraocular pressure in the myopic eye is generally increased. The myopia increases with this progressive distention, and *this is a real disease of the eye.*[1]

What are the dangers of high degrees of myopia? In the first place there is the tension of the inner membranes of the eye, and the ophthalmoscope shows the limited crescent at the border of the optic disk, but in many cases we see other changes that are not to be explained as the results of tension; small isolated patches lie about the disk—evidences of choroiditis. These circumscribed patches appear in the region of the macula lutea, sometimes only changes in the choroidal pigment, but often in the form of hæmorrhages presenting the appearance of a chorio-retinitis circumscripta, and in these cases the patients can no longer read as before; objects appear of an irregular form, and a central scotoma soon follows.

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[1] Donders, "Refraction und Accommodation des Auges," p. 288.

Later opacities appear in the vitreous humor, and, if these are diffuse and become organized, there is great danger for the eye. Opacities in the lens occur too, and the saddest and unfortunately not an infrequent fate of these eyes, separation of the retina and subsequent blindness.

One word with regard to the frequency with which this affection occurs, before we pass on to a consideration of the conditions of its development.

Dr. Cohn, of Breslau, published in 1867 the results of an examination of the eyes of 10,060 school-children. He found a constantly-increasing number of myopic pupils from the lowest to the highest schools. The following table gives the percentage of near-sighted pupils in the various schools:

Elementary school	6.7	per cent.
Intermediate school	10.3	"
High-school (Realschule)	19.7	"
Colleges (gymnasia)	26.2	"

In the high-schools one-half of the first class were found to be myopic.

In the colleges the statistics were more dreadful. Here in the sixth class 12.5 per cent. of the pupils are near-sighted, while in the first class there is the enormous percentage of 55.8 of myopic students.

Lately, Erismann[1] has published carefully-prepared statistics of the refraction of pupils in the schools of St. Petersburg. Four thousand three hundred and fifty-eight scholars were examined. Of these 30.2 per cent. were myopic. Here, as in Cohn's tables, a comparison of the different classes shows a startling increase from year to year in the number of myopes. Among children of eight years of age, 10.2 per cent. were found to be myopic. Among the pupils of twenty years, myopia was found in 40 per cent. of all examined.

The value of these statistics, taken from so large a number of pupils, must not be underrated. They establish the fact of the very great frequency of myopia, and show in most alarming figures the rapidity of its progress.

Let us now consider the factors concerned in the development and progress of myopia. We are told[2] that these are:

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[1] "Archiv. f. Ophth.," xvii., 1, pp. 1–79.

[2] Donders, "Refraction und Accommodation des Auges," p. 288.

1. Pressure of the muscles on the eye during great convergence of the visual axis.

2. Increase of the intraocular pressure, produced by accumulation of blood in the eye through bending the head forward.

3. Conditions of congestion in the fundus, which lead to softening of the tissues, and even when the intraocular pressure is normal, but still more when it is increased, produce distention of the membranes.

The most potent of these factors is undoubtedly the first. Coccius[1] regards the convergence of the visual axis as a most important element in the development of myopia. He says: "The external muscles may give the eye a somewhat different shape at the same time that the ciliary muscle is engaged in accommodation." Giraud Teulon[2] considers that the act of convergence alone in the horizontal plane must through muscular pressure increase the intraocular pressure, and especially would this be the case where there was insufficiency of the internal recti muscles. The staphyloma posticum he regarded rather as an evidence of the insufficiency than of the myopia.

One word with regard to the relation between this insufficiency of the interni and the increase of the myopia. If the insufficiency exists for all points of the visual range, the muscle of accommodation is never at rest. On examining binocularly the degree of the myopia of such a patient for the distance, we find it too great, and not until either the muscular equilibrium is restored by aid of a prism of abduction or one eye is closed do we obtain the actual degree of the myopia. As Von Graefe[3] further points out, this apparent increase of the myopia through the muscular insufficiency is entirely analogous with what we find in latent hypermetropia—it is a limitation of the range of accommodation. Just as the prism with its base inward sets free a portion of the accommodation for binocular vision, so we need not be surprised that the patient who has formerly used concave 12 in order to see distinctly in the distance, after the tenotomy sees just as well with concave 14, 16, or even 18.

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[1] Coccius, p. 87.

[2] *Annales d'Oculistique*, November, December, 1866.

[3] Zehender, 1869, p. 230.

Von Graefe[1] considers insufficiency of the interni a most important factor in the progress of the myopia, and pointed out most clearly the beneficial action of a tenotomy of the external rectus in these cases. In a very large proportion of the cases of progressive myopia, perhaps in nine-tenths of all the cases, there is insufficiency of the interni, and, in an operation for the relief of the muscular difficulty, we are assured that we have a means of preventing the further increase of the myopia. How great an advance such an operation as this would be, needs but a moment's reflection. If, by a simple tenotomy, we can, besides relieving the very distressing symptoms of muscular asthenopia, moreover prevent any further increase of the myopia, does it not deserve our most earnest attention? We have endeavored to depict some of the dangers to which the near-sighted eye is liable. We have seen that such an eye is exposed to a chain of lesions that terminates not infrequently in blindness. Experience has shown us that in nearly all of these cases of progressive myopia there is an insufficiency of the internal recti. Many of the most acute observers have regarded this insufficiency as the most important factor in the development of the myopia, and one has gone so far as to call the staphyloma posticum the evidence of the insufficiency of the interni.

Let us now see what evidence there is in favor of tenotomy in these cases, and how far experience has shown that it has fulfilled what its advocates have claimed for it. Let us refer again to the previously-cited article of Von Graefe. Out of eighty cases of progressive myopia after tenotomy of the externus, only six remained markedly progressive, and four slightly so. All of these eighty cases were such as in the last two years before the operation had grown decidedly worse: for example, an increase of the myopia from $\frac{1}{7}$ to $\frac{1}{4.5}$, from $\frac{1}{24}$ to $\frac{1}{10}$, from $\frac{1}{12}$ to $\frac{1}{5}$. These were all cases observed during a period of at least four years.

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[1] "Ueber die Operation des dynamischen Auswärtsschielen, besonders in Rücksicht auf progressive Myopie." *Klin. Monatsblatter für Augenheilkunde*, vii., August and September.

In a recent number of Von Graefe's "Archiv.," Mannhardt publishes two cases of progressive myopia, in which the arrest of the disease after tenotomy was very marked. The first case was one of a girl ten years of age. The myopia of the right eye was $\frac{1}{27}$; of the left eye, $\frac{1}{50}$. Six months later, myopia of the right eye $\frac{1}{14}$; of the left eye $\frac{1}{30}$. Six months after this the myopia had increased to $\frac{1}{9}$ on the right eye, and $\frac{1}{18}$ on the left. There was marked insufficiency of the interni. The power of abduction was represented by a prism of 11°. A tenotomy of the right externus, and a month later of the left, was made. Three months after operation, the myopia, which had been so steadily increasing before, was now found to be only $\frac{1}{14}$ on the right eye, and $\frac{1}{27}$ on the left, and decreased steadily afterward.

In the second case, patient twenty-nine years of age, on the right eye myopia $\frac{1}{4}$; on the left eye $\frac{1}{12}$. There was facultative divergence of 6°. Tenotomy of the left externus was made. Fourteen days after operation, the myopia of the left eye was $\frac{1}{16}$. Four weeks later it was $\frac{1}{20}$, and at the end of ten weeks it was $\frac{1}{24}$. The myopia of the right eye was reduced from $\frac{1}{4}$ to $\frac{1}{5½}$. In the course of his paper on this subject, Mannhardt states his conviction that the inflammatory processes which we call sclero-choroiditis posterior, with all their consequences, that the myopia itself, at least the progressive form, owe their origin to a purely mechanical cause, which we can correct or completely overcome.

The following five cases, all of progressive myopia, and in all of which a tenotomy of the external rectus was made to stay the disease, I have selected from my own records:

CASE I.—Sigismund Wroblewski, twenty-five years of age, student of philosophy. Latterly myopia markedly progressive. Right eye, myopia $\frac{1}{5}$, v. $\frac{3}{4}$; left eye, myopia $\frac{1}{4½}$, v. $\frac{1}{2}$. Insufficiency of the interni, in 10″, of more than 18°. Insufficiency of interni, in 15′, of 9°.

Prism of abduction 18°.

On November 30, 1869, the right externus was cut. No suture was applied.

On June 11, 1870, a tenotomy of the left externus was made, and a suture, to limit the effect, inserted. A subsequent examination of the refraction showed no increase in the myopia. The muscular asthenopia was relieved, and patient received concave prismatic reading-glasses.

Case II.—Felix Gerloff, aged twenty-one. Right eye, myopia $\frac{1}{2}$, v. = $\frac{1}{3}$; left eye, myopia $\frac{1}{2\frac{1}{2}}$, v. = $\frac{1}{2}$.

In 8″ insufficiency of interni of more than 22°.

In 14′ insufficiency of interni of 10°.

Prism of abduction of 10°.

January 6, 1870.—A tenotomy of the right externus, with a suture to limit the effect, was made. Six months later, on June 2d, the myopia of the right eye was found to be the same; that of the left was $\frac{1}{3}$.

Case III.—Marie Zalenska, seventeen years of age. Myopia of right eye $\frac{1}{36}$, v. = $\frac{3}{4}$. Myopia of left eye $\frac{1}{5}$, v. = $\frac{1}{2}$.

In 8″ dynamical divergence of 18° and more.

In 10′ dynamical divergence of 9°.

After correction of a slight difference of height in the two eyes, prism of abduction found to be 10°.

May 18, 1870.—A tenotomy of the left externus, with a limiting suture, was made, and on the 18th of June a partial tenotomy of the left superior rectus.

June 25th.—Myopia remains the same as before the operation.

Case IV.—Ernst Siegfried, student, seventeen years of age. Latterly rapid increase in the myopia, which is now on the right eye, $\frac{1}{6}$, v. = $\frac{1}{2}$; left eye, myopia $\frac{1}{7}$, v. = $\frac{1}{4}$.

In 8″ insufficiency of interni of 12°.

In 10′ insufficiency of interni of 2°.

Prism of abduction 12°.

May 28, 1870.—A tenotomy of the left externus, with limiting suture, was made. Patient subsequently received weak concave prismatic glasses for his work, and the myopia remained the same as at the first examination.

Case V.—Hermann Simon, weaver, aged eighteen years, came to the clinique on account of rapidly-increasing near sight. Had never worn a glass.

On both eyes myopia $\frac{1}{3}$, v. = $\frac{1}{5}$.

In 6″ insufficiency of the interni of 10°.

Prism of abduction, after correcting a difference of height in the two eyes, 14°.

July 4, 1870.—Tenotomy of the left externus was made, and a limiting suture inserted. Patient subsequently received concave glasses No. 6 for his work. A later examination of his refraction was not made.

How is it that an operation that promises so much should not have been generally adopted and found its proper place in operative surgery? One reason for this has undoubtedly been the fact that neglect of the rules for the regulation of the effect of the operation has caused either real convergent strabismus or a most troublesome and persistent temporal diplopia, and, in consequence of this unfortunate issue, a distrust has grown up in the minds of the surgeons who have practised this measure.

That there is no danger of an excessive result from the operation if the effect of the tenotomy is accurately measured, my own experience and the careful observation of a large number of cases, operated upon by my late teacher, Von Graefe, have taught me.

I propose now, as briefly as possible, to review the method of examination of these cases, and indicate the precautions to be taken both at the time of operation and during the subsequent treatment.

The first and most commonly-employed test consists in directing the patient to fix with both eyes an object, which is advanced on the median line, until the nearest point of binocular fixation is ascertained. The power of maintaining binocular fixation for a near object is no proof that there is no insufficiency of the interni, for the punctum proximum is the result of fusion, and in cases of most marked dynamical divergent squint the punctum proximum is often excellent. The examination of the binocular near point reveals real relative divergent strabismus, if that be present, but the dynamical condition of the lateral muscles must be ascertained by other means.

Another test consists in momentarily interrupting binocular vision by covering one eye, and then watching the rotation that the eye makes while under cover, as well as the rotation required in order to regain fixation when the screen is removed. The great difficulty in measuring slight excursions of the eye prevented this test from fulfilling all the demands made upon it.

The last and conclusive test for insufficiency consists in interrupting binocular vision by means of a prism, with its base directed upward or downward. This, Von Graefe called the test of equilibrium. The prism thus held produces of necessity vertical diplopia. Every effort at fusion now ceases, and the dynamical condition of the lateral muscles now manifests itself. Dynamical divergence shows itself by a crossed position of the images, and the prism that is required to bring these images on the same vertical line represents the amount of the insufficiency for a given distance. We first measure this amount for the reading or working distance, to ascertain whether strong efforts at abduction are necessary. The usual test consists of a dot, through which a vertical line is traced. The patient's attention is directed especially to the dot, and the fine line serves to aid him in his estimate of the lateral distance between the dots. Having measured the amount of the disturbance of equilibrium for the ordinary working distance by means of a prism with its base held vertically, the same test is applied to greater distances, and finally for fifteen feet. At this distance it is customary to substitute for the point a candle-flame. The amount of the disturbance of equilibrium for this distance is measured in the same way as before.

Before proceeding further it is proper to consider for a moment this test. Is it sufficient? Can we by this means detect ordinary cases of insufficiency of the internal recti, and measure the degree of such insufficiency? To this we answer unhesitatingly, Yes. This method of examination has been criticised, and the infallibility of the tests questioned. We believe that, by a careful application of the principles so distinctly enunciated by Von Graefe, these tests will prove in nearly every case sufficient. Von Graefe especially insisted that, in the examination of the insufficiency for the reading distance, the line should be, relatively to the point, very fine, otherwise the patient's attention would be occupied with the double images of the lines, and he would therefore make constant efforts to fuse the two lines in one vertical plane. Of course, if such efforts at fusion are made, the value of the test is lost. But, as Von Graefe points out, we have a means to detect this effort to fuse. This consists in giving the prism a slight inclination toward the one side or the other. If, when the prism is held before one eye, with its base downward, the patient sees two superimposed dots lying on one and the same vertical line; then, on turning the prism in the least about the visual axis, if no efforts at fusion are present, the dots will cease to lie in a vertical plane. If the base of the prism in this case is turned toward the temple, there will be crossed diplopia; and, if toward the nose, homonymous. If, however, efforts at fusion are still made, then the inclination of the base of the prism will have no other effect than to diminish the vertical distance between the dots. "Whenever the inclination of the prism does not change the lateral distance between the two points, that is to say, when the two dots appear upon one line, not merely in one position of the prism, but continue so while the inclination of the base is changed, then the test proves nothing." In order to avoid this disposition to fusion, Von Graefe advised in this test the use of a figure where the dot was larger and the line very fine, directing the attention of the patient especially to the dot. If efforts at fusion were still made, then the figure was used where the line was very short, or a simple dot alone. Von Graefe mentions further exceptional cases where the minds of patients are so occupied with the idea of vertical contour, that even for the double images of a single dot they make efforts at fusion. In such cases he advises using a figure where the dot is very fine, or to substitute for the dot a short oblique line, and, while the test is applied, of turning the paper on which the line is traced.

Having now ascertained the degree of the insufficiency for the ordinary working distance, as well as for the distance, we must determine the power of abduction. As we shall see, unless this power of abduction or facultative divergence exceeds a certain limit, a tenotomy of the externus is out of the question. With marked insufficiency of the interni for the reading distance, we may find, for an object held fifteen feet away, no trace of dynamical divergence—indeed, there may be dynamical convergence; but still, if the power of abduction be good, there is no contraindication to the operation. Is it a disadvantage to have for vision in the distance an overbalance of the internal recti? No. The postulates for vision in the distance are no longer the same as for a nearer point, the visual act is not so fixed, is more transient. This negation holds as long as the patient does not really squint, so long as the overbalance is merely dynamical. Then, the first question to be answered, before we think of an operation to relieve the insufficiency, is, What is the power of abduction for the distance? What prism with its base inward can be overcome by divergence? This amount of ability to abduct we can remove. If this amount be less than what is represented by a prism of 8°, an operation is out of the question.

In seeking the prism which for the distance can be overcome by facultative divergence, great care must be taken that too strong a one is not chosen. Want of practice on the part of the patient, exclusion under the prism, an actual difference in height of the two eyes, may lead us in one case to choose too strong, and in the other too weak a prism. If the power of abduction in proportion to the disturbance of equilibrium, as found by the equilibrium test, appear very small and below the amount (8°) required to admit of operative interference, it is then often desirable to prescribe the abduction prism overcome to be worn by the patient for the distance for some time. Frequently, then, after a few hours, the power of abduction increases by 2° or 3°, and after two or three days by 4° or 5°, and then we obtain a facultative divergence of the amount required, its absence in the first instance being due alone to want of practice. Care must be taken that the double images stand each in the same horizontal plane. If they do not, it may be accomplished by a slight rotation of the prism, and then the facultative divergence will be found greater than was supposed, one image standing higher than the other having previously made fusion difficult. This difference in height may have arisen from the surgeon not having held the prism strictly horizontal; sometimes, however, in these cases, besides the disturbance in the lateral equilibrium, there is one in which the recti superior and inferior are concerned, causing the difference in height of the double images. As soon as this difference in height is corrected, and the double images brought upon the same horizontal plane, it will be found that a stronger prism can be overcome. I have in mind a case where there was progressive myopia of a $\frac{1}{5}$ on one eye, and $\frac{1}{36}$ on the other. Insufficiency of the interni, in eight inches, of more than 18°. An insufficiency, in ten feet, of 9°. The strongest prism that could be overcome for the distance by divergence was 5°–6°. Much as the operation was indicated with this small amount of facultative divergence, it was impossible. A careful examination showed that the left eye stood higher than the right, and upon correcting this difference of height by means of a prism of 4° (base downward), a power of abduction represented by a prism of 10° was developed. Tenotomy of the externus was now made, with a limiting suture, and subsequently a partial tenotomy of the left superior rectus. The insufficiency was much relieved, and binocular vision secured.

Care must be taken that the patient does not exclude under the prism. To be assured against this error, it is not sufficient that, with the least rotation of the abduction prism, diplopia appears; because patients who are in the habit of periodically excluding, as is often the case, find it easy to do so for images which lie in the same horizontal plane, but not when a slight difference in the height of the image is induced; nor is it sufficient that the next strongest prism produces homonymous diplopia, for it often happens that for certain excentric positions the patients exclude, and not at either side of this. The only method of finding if the patient excludes with one eye is to cover each successively with a screen. If, on doing so, the covered eye remains in the same position as previously, we may know that there is no exclusion active; if, on the other hand, one of them makes a slight rotary motion, the contrary is true.

On which eye is the tenotomy to be performed? As a rule, we may say on that eye which first deviates outward on approaching the fixation object, or it is to be performed on the eye with the strongest facultative divergence, or on the one with the worst acuteness of vision.

If the insufficiency of the interni is considerable, represented by a prism of 14° or 16°, then it is most desirable to divide the effect of the operation between the two eyes, making successively a tenotomy of each externus, and limiting such effect, as we shall see presently, by the conjunctival suture.

The proportioning of the operation to the effect desired is of the utmost importance, and a neglect of this will leave the patient in a much more unhappy condition than before the operation. Inaccurate measurement may leave the patient with a most distressing diplopia. The following rules for regulating the effect of the operation, based upon his own experience, I give in Von Graefe's own words. A simple tenotomy of the externus produces an effect equal to that of an abduction prism of 16°; accordingly, with a facultative divergence of 15°, 16°, 17°, or 18°, a simple tenotomy is performed. For one of 14° and less, a restricting suture must be applied. This suture, by drawing the edges of the conjunctival wound together, prevents the too great retraction of the muscle. Its effect depends on its direction (horizontal), on the amount of conjunctiva it contains, and on the closeness with which it is tied.

If the abduction prism = 14° or 13°, a slightly horizontal suture is to be applied, containing on each side one line of conjunctiva, and it is to be tied so as barely to close the wound. If 12° or 11°, then a moderately horizontal suture, containing about one line on either side, the wound to be closed. If 10°, a moderately horizontal suture, containing about one and a half line, the wound to be closed. If only 9° or 8°, the suture is to be applied as horizontally as possible, is to include two lines of conjunctiva on either side, and the edges are to be drawn tightly together. If the abduction prism amount to more than 18°, it is best to divide the operation between both eyes.

Immediately after the operation, the effect must be controlled by means of the equilibrium test, made in what is called the "position of election." The position of election lies about ten feet from the eyes, about 15° toward the side of the unoperated eye, and 15° below the horizontal plane in which the orbital axes lie. Experience shows that in this position the immediate effect and the ultimate effect bear a much more constant relation to each other than in the median line. In the latter place the transitory operative effect comes too much into play.

In this position of election now there must be, immediately *after the operation, equilibrium.* If we find in this position 1° to 2° of divergence that gradually passes over to a slight convergence in the middle line, and a strongly-pronounced convergence as the object is moved over to the side of the operated muscle, we may be fully contented. Never, however, should we leave in the position of election a convergence of more than 3°, for then there is danger of strabismus, convergence, and diplopia ensuing. Should the equilibrium test not show a condition in accordance with these rules, an immediate change in the suture must be made.

With attention to these rules, a real convergence with diplopia in the median line may be avoided, but they do not afford protection against temporal diplopia toward the operated side. In order to avoid this, the defect of absolute motion produced by the operation must be subjected to control. A defect of motion toward the operated side of more than three lines must never be allowed to remain, but must be moderated by a suture. If the measure of the operation was high (> prism 14°), a defect of 2¼ to 2½ lines may be left; if the measure was less than this, a defect of motion of even two lines must be moderated. A defect of 1½ line may be left, even with small measures of operation (8° to 9°) without any danger, always provided the demands in the position of election are supplied. Should the correction of the defect of motion materially influence the result of the equilibrium test, this dilemma may be avoided by a subsequent operation on the other eye.

If the condition be examined six or seven hours after the operation, a slight increase in the effect will be found in the position of election. Instead of dynamical equilibrium, slight (1° to 2°) dynamical convergence will be found. This convergence increases until the fourth day, when it amounts to 3°, 4°, or 5°, and in the median line from 8° to 16°. According to their greater or less power of fusion, the patients see double on the other side of four or three feet, or even one and a half foot in the median line. This increased effect increases again from the fifth, sixth, or eighth day, so that the diplopia in the median line disappears, mostly in the second, or at latest in the third week, and the lateral diplopia to the side of the operated eye some weeks later. The defect of absolute motion usually remains the same for some days after the operation, and then gradually decreases until, two or three weeks afterward, it only amounts to half, and, in some months later, the quarter of its original amount.

As to the after-treatment, the operated eye is to be bandaged, in order that as far as possible no movement of the eye shall modify the immediate effect. If a suture has been used, the patient must be seen within six or eight hours after the operation, and the equilibrium test made in the position of election. Should the effect now be found greatly increased, either from the suture having come out, or through tearing of the conjunctiva at the point of puncture of the suture, a new one must be put in place which will restore equilibrium in the position of election. On the other hand, if now we find the effect reduced (a thing that sometimes happens through an ecchymosis occurring after the bandage was applied, or through swelling of the portion of conjunctiva contained in the suture), and if this reduction of the effect is as great as 5° or 6°, it must be corrected. At the end of twenty-four hours after the operation, the suture has established its effect, and may be removed. If at this period too great an increase in the effect be found, corresponding to a prism of 6° or 7°, then a new suture must be applied, which shall secure equilibrium in the position of election. If there be no increase in the effect of the operation, then the suture is to be removed, and the patient directed to look to the side of the unprotected eye, by which means the still delicate adhesions will be stretched, and the operative effect increased.

On the second day much the same principles are to be observed. If there be dynamical convergence of 2° to 4° in the position of election, there are no measures to be taken. If dynamical convergence of 7° or more, a new suture is to be applied, and the adhesions loosened. If there be dynamical equilibrium, then the eyes are to be directed strongly to the side of the unoperated eye, and this can be best accomplished by means of the ordinary squint-spectacle, with its opening outward and before the healthy eye. If there be dynamical divergence, and the suture still in place, it is to be removed, and an horizontal suture, inside of the cornea, containing a large fold of conjunctiva, applied.

If, in the course of the next few days, between the third and the sixth, it becomes necessary to increase the effect, the patient must be directed to persistently look toward the side of the unoperated eye. Should it now be necessary to diminish the effect (an increase of 5° or 6° may be left so), the edge of the wound must be raised, the attachments separated, and a more effective suture applied.

In the course of the second and third weeks after the operation, a decrease in the effect usually appears. Should this decrease not prove sufficient, then associated movements toward the side of the operated eye are to be advised. Toward the end of the second week, if the effect is to be diminished, the patient should receive the strongest possible prisms of abduction for reading. If, on the other hand, an increase in the effect is desired, a combination of concave glasses, with prisms of abduction, should be worn for the distance.

In the foregoing rules for the management of the operation, free use has been made of Von Graefe's original articles, and Dr. Swanzy's excellent *résumé* of the subject in the *Dublin Quarterly*.

I cannot leave this subject without urging upon my readers, and especially upon such as are interested in ophthalmic medicine, the great importance of this operation as a prophylactic measure in progressive near sight. It may be said that we shall have to operate upon a large class of cases where the patients complain of scarcely any symptoms of asthenopia, and where formerly a tenotomy would not have been thought of; but the end to be gained, and the dangers to be warded off by the operation, fully justify the measure. If I have succeeded in drawing the attention of the profession to the importance of muscular insufficiency as a cause of progressive myopia, a fact first established by Von Graefe, and rightly regarded as one of his most brilliant contributions to ophthalmic literature, the object of this paper will be more than accomplished.

Art. III.—*Nævus.*[1] By J. H. Pooley, M. D., of Yonkers, New York.

SYNONYMES.

Aneurism by Anastomosis, Circoid Aneurism, Phlebarteriodialisis, Erectile Tumors, Vascular Tumors or Growths, Cavernous Tumors, Morbid Erectile Tissue, Nævus Maternus, Maculæ Materni, Nota Infantum, Stigmata, Lupus Varicosa, Mother's Marks, Telangiectasis, Hæmatoncus, etc.

Such are a few, and *only a few*, of the names that have been used from time to time to designate a very interesting and important class of surgical diseases, which, though presenting some marked distinctions, are all closely allied, may most properly and conveniently be treated of together, and are generally included under the simple term nævus.

Early in the present century, John Bell, a distinguished surgeon of Edinburgh, called the attention of the profession to a peculiar and dangerous form of pulsating tumor which he aptly entitled "aneurism by anastomosis," obscure notices of which may be found in the earlier works on medicine, but which he was the first carefully to study and accurately to describe; and, indeed, with regard to the peculiar form of disease to which he referred he has left nothing for subsequent writers even down to the present day to do, but to repeat his elegant and graphic descriptions.

And here let me take the liberty of digressing, to remark that there is no small profit as well as pleasure to be derived by referring to the *original* descriptions of disease by our older writers, many of whom were men of unwearied research, close and acurate observation, elegant learning, and powers of vivid, clear description, which would grace the pages even of our best historians or poets. They are too much neglected, especially by our younger men, and while their words are copied from book to book, we are forgetting all but the names of Sydenham, Bright, and Addison, in medicine, and Pott, Abernethy, Hey, Bell, and others, in surgery. After Bell's description had turned the attention of the profession to the study of these diseases, it was soon found that, besides his

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[1] A paper read before the New York Medical Library and Journal Association, March 1, 1872.

"aneurism by anastomasis," there were a number of partially similar cases, which, though not answering to his description in activity and pulsation, were yet tumors filled with blood, and composed mainly of enlarged and diseased vessels. It was to designate more accurately these allied tumors in all their varieties, that the multitude of names was invented, some of which stand at the head of this article. It is therefore necessary, before we can proceed any further, to adopt some simple and comprehensive nomenclature for this whole class of diseases, which need not be completely free from objection, to be both useful and convenient. I shall retain the name "aneurism by anastomosis" for those cases to which Bell first applied it, and include all the others under the general title of "nævus," with the subdivision into cutaneous, subcutaneous, and mixed.

ANEURISM BY ANASTOMOSIS.

The condition of vessels (chiefly arterial) which constitutes this tumor may also be found in the substance of the viscera, and even, it is said, in the bones; the pulsating spleens and livers spoken of by old writers are most probably of this character; a description of one of these by Sulpius, and particularly his explanation of it, is so curious that I will quote a part of it. He speaks of a pulsating spleen which could not only be felt, but also heard, and that at a distance of *thirty feet* from the patient, and its pulsations as easily counted by the ear as the finger; the following explanation which he gives of it is about as curious a piece of pathology as I ever remember to have come across: "And the atra bilis, and the vital spirits, and the arterial blood, being obstructed, strive with one another so as to move easily the heavy and enlarged spleen, and make it beat against the ribs; all of which we can very well understand by the analogy of other confined spirits, what they can do when opposed may easily be imagined from the examples of thunder, and cannons, and chestnuts roasting in the fire." Not only the solid but the hollow viscera may be affected, in proof of which it may be mentioned that there is a preparation in the museum of Guy's Hospital of a vascular growth of this character developed on the jejunum.

No doubt many of the bleeding cancers described by the older writers may be referred to this class of diseases as well as those other bloody tumors, the hæmorrhage from which, when either accidentally or designedly cut into, was so profuse and uncontrollable as to appall the coolest and most courageous.

Schenkius relates a case, probably of the variety known as circoid aneurism, under the following title: "Capitis Arteriæ, a Vertice ad Occipitum usque cuidam in tantum dilatatæ intumuerunt ut Vaicum Speciem repræsentarent," which is probably one of the earliest on record. Notwithstanding, however, these scattered notices, it remained true, as Bell modestly remarked, that "this disease had been too much neglected, and, as its nature and diagnosis remained uncertain, its treatment was either inefficient or perilous."

The aneurism by anastomosis *generally* presents itself on the surface of the body in the shape of a tumor situated under the skin or superficial fascia, having a nearly globular form, and varying extremely in size, but often attaining very considerable dimensions. It has a soft, boggy, or doughy feel, not unlike that of a fatty tumor, for which, indeed, it has been mistaken by no meaner diagnosticians than Liston and Fergusson, the former having begun the extirpation of such a tumor, supposing it to be a lipoma, and only finding out his mistake in the course of the operation; and the latter, having begun the removal by the knife of a tumor the nature of which he could not clearly make out, was obliged to finish it with the ligature, it being an aneurism of the kind under consideration.

Such mistakes as this, however, could only occur when *one* of the peculiar signs, indeed *the* pathognomonic sign, of the disease was absent, or very much obscured. I refer to pulsation in the growth. The pulsation in these tumors is of a heaving, distensive character, and generally only fully perceived upon grasping them in the hand, or between the thumb and fingers; sometimes they are accompained with a bruit or murmur, but not invariably; one writer speaks of a case in which the whizzing and buzzing might be compared to the noise of a shop full of machinery. When the tumor is large, and situated about the head or neck, the pulsation is often very annoying and painful to the patient, is in fact the principal symptom complained of, and from its increase upon stooping, hurried motion, or mental excitement, unfits him for most of the duties of life.

These tumors, when situated on exposed portions of the body, often give way to friction or violence, and bleed profusely. They become much swollen during laughing, crying, coughing, or any action which intercepts the return of blood to the heart. The skin over them may have from the first a purple or reddish hue, or it may be perfectly natural in appearance, and like the surrounding integument at first, and gradually become thinner and of an unnatural hue, purple or dusky; following this degeneration the integument sometimes bursts, and bleeding more or less violent takes place, the aperture from which the hæmorrhage occurs taking on afterward an unhealthy ulceration, and becoming covered with dark scabs and crusts. In women such tumors have been known to bleed regularly at the menstrual epoch, and at no other time.

The constant recurrence of these hæmorrhages, and the uncertainty as to their amount, render them highly dangerous, and they have frequently proved fatal.

When we consider what would be the appearance of such a tumor with its livid color, fissured and incrusted surface, and frequent bleedings, we feel strongly inclined to the opinion that many of the "bleeding cancers" of old were of this nature, and perhaps among them that which Ambrose Paré prided himself on removing by caustics after the knife had failed. Occasionally, when situated on the head or neck, patients have experienced great relief to the unpleasant feelings already alluded to from these spontaneous bleedings; and others, when these did not occur, have sought relief by substituting periodical venesections.

These tumors may occupy almost any conceivable situation, although they are most frequent on the back and limbs. Bell describes one of large size occupying the recto-vaginal *cul-de-sac*, which, however, did not prevent the birth of a child, being partly emptied of blood by the pressure of the advancing head, and partly driven before it so as at last to be visible externally. Aneurism by anastomosis is most frequently congenital, or at any rate appears soon after birth, but yet, oftener than the forms of disease presently to be spoken of, comes on late in life, or follows some local injury.

Its pathology, or morbid anatomy rather, does not differ materially from that to be described under the head of nævus, except that is more arterial, has larger and more numerous vessels, and fewer of those cells or vascular interspaces which characterize the commoner forms of nævus.

John Bell's rule of treatment was excision, and again and again does he reiterate with anxious emphasis the injunction to cut *out* the tumor, but not to cut *into* it; and well he might dwell particularly on this point, for an incision into one of these pulsating vascular growths, fairly alive with vessels, and many of them of no contemptible size, must be a most frightful and alarming occurrence; in some respects worse even than opening a true aneurism. But, however easy it may be to cut out one of these growths when clearly circumscribed and favorably situated, there may be many circumstances, of situation or otherwise, that would render it impracticable, and then the principal resources of the surgeon would be either ligature of the vessels of supply, which are generally enlarged and often very numerous, or ligature of the main trunk going to the part on which it is situated, as, for instance, the carotid if situated on the head or neck; the latter procedure I should judge to be generally the better course.

Ligature *en masse* is not so well adapted to these cases as to the softer venous tumors generally called nævi, and pressure generally does no good, and often seems to excite these tumors to more rapid and vigorous growth.

But the question of treatment, as well as of pathology, will be more fully considered under the head of Nævus. For really pure instances of aneurism by anastomosis are rare; many of those described by John Bell himself were not such, and they blend in all degrees with the other varieties of the disease, the largest and most formidable tumors being often compounded with common subcutaneous nævi, and with the cutaneous or maculated variety as well.

NÆVUS.

Nævi are divided into capillary and venous, or, as they are oftener called, the cutaneous and subcutaneous; and the mixed, or those which are partially cutaneous and partially subcutaneous, and constitute the largest number of cases. External or cutaneous nævi include all those appearances called mother's marks, which are found on children at birth, or make their appearance very soon afterward. These spots vary exceedingly both in size and color, from the little scarlet specks no bigger than a pin's-head to the large, irregular, livid or wine-colored blotches covering half the face, and sometimes almost the entire face and head.

The little scarlet points alluded to, as they increase in size, are found not to be confined to the skin, but form also little soft, elastic tumors just beneath it, which disappear for a moment on firm pressure, and gradually return when it is removed; they sometimes remain stationary for years, or even for life, but more frequently they soon begin to enlarge, and sometimes very rapidly, becoming in time troublesome or even dangerous tumors; and, though they remain stationary for a long time, they are not to be depended on, for they may, from a blow or other irritating cause, or spontaneously, take on a troublesome activity at any time; and, as they are amenable to the simplest treatment at first, and may subsequently get beyond the reach of the most heroic, they ought as a rule to be summarily dealt with as soon as observed.

The larger, dark-colored spots are the only ones that are entirely and essentially cutaneous, and whose presence is to be regarded as a *mere* deformity. Their color is either dependent on the presence of blood in the dilated capillaries and small vessels of the skin, or upon this with a superadded pigmentary deposit, and exhibits all the variety of shade that can be produced by the mixture of blue venous blood, red arterial blood, and pigment of varying intensity from the light fawn of an ordinary freckle to an absolute black, which combinations are found in almost infinite variety.

There is a class of nævi, or spots, or moles, as they are frequently called, which are dependent entirely upon pigmentary deposit; they are of varying size, generally more or less dark-brown in color, elevated somewhat above the surrounding skin, and often surmounted with stiff bristles, or long, silky hairs. These spots are undoubtedly the result of some vascular derangement in the skin, although they are less obviously so than the other varieties, and therefore belong, not only by convenience of arrangement, but in scientific reality, to the class of diseases we are considering.

We all know very well that portions of the skin which have been irritated by a blister, by various cutaneous eruptions, burns, or exposure to the sun, sometimes remain permanently darker than the surrounding surface, no doubt as a result of the temporary increase of vascularity from the application of the irritating cause, whatever it may have been.

The most convenient way to deal with these dark nævi, should any treatment be deemed expedient, is by caustics or incision; and, as the latter leaves the least scar, it is generally preferable, but the cases are exceptional in which it is advisable to interfere with them at all. These external nævi, both vascular and pigmentary, are very commonly attributed to impressions made upon the mother during pregnancy, and compared to the object producing the impression, whether longed for or feared; a piece of pathology that belongs rather to a past era in medicine than the present. Those who delight in such tales of wonder may find plenty of them indorsed by the authority of great names among our older writers, where it is stated that women who had longed for raspberries, strawberries, cherries, etc., or been terrified by mice, frogs, etc., have found to their mingled grief and pleasure their hapless babes memorialized with these mental experiences. Absurd as this is, it has left an indelible impress on our older literature, and a multitude of names remain to attest the avidity with which these pretended resemblances were once received, as for instance, nævus araneus, nævus foliaceus, nævus morus, nævus ribes, etc.

We pass now to the subcutaneous nævi, which are more important than those just described, and often tax to the utmost the skill and patience of the surgeon in their treatment.

They are felt as soft tumors under the skin, frequently feeling very much like the body of a leech, or a coil of earth-worms; they are compressible, and, when their situation admits of it, may be nearly or quite emptied by persistent pressure, and when it is removed they slowly fill themselves again; but they are generally without pulsation or thrill, though sometimes a slow, indolent pulsation may be perceived in them, but not the active throbbing of aneurism by anastomosis.

The skin over them sometimes presents its natural appearance, but more frequently is changed in color, either by being thinned and allowing the blueness of the vessels to be seen through it, or by being the seat of capillary nævus or maculation.

Their shape is generally globular or oval, though in this respect they differ extremely, and present an endless variety of contour and outline. They become distended when the child cries or struggles, or laughs violently, or, if about the head, when it stoops, and subside again when the temporary excitement is over, or the erect posture resumed. Very often they may be plainly felt to contain a central, harder portion, or a cyst from which the contents cannot be squeezed out, and examination after death verifies this impression, by showing that portions of such growths occasionally undergo a cystic or other degeneration; this fact was noticed by John Bell in some of the tumors he describes. The tendency of these tumors is usually to rapid growth, and that in many cases indefinitely, though sometimes they seem to have a limit or maximum of increase beyond which they do not go; and again they sometimes, after reaching what appears to be their acme, gradually decline and disappear, but this is an exceptional event, and no more to be looked for than the spontaneous cure of a true aneurism. In contradistinction to their ordinary tenacity of life, they often exhibit a tendency to ulceration of the surface, which is followed by hæmorrhage, which is generally alarming, and in children may easily prove fatal. Like the aneurism by anastomosis, they may appear upon almost any part of the body; perhaps their most usual situation is on the face and head, about the forehead, eyebrows, eyelids, or temples; they are not uncommon in the orbit, and have been seen in the mouth, the nasal and aural cavities, and on the pudenda of female children. Generally speaking, the diagnosis of these cases is with ordinary care easy enough, but not always; for Guersant and Moreau each report a case where a seton was passed through a tumor at the angle of the eye, under the belief that it was a nævus, but it turned out to be encephalocele, and death in each instance was the result of the error. To be aware of the possibility of such mistakes, and constantly to bear it in mind, are the best safeguards against their repetition.

With regard to the cause of these vascular tumors, little can be said except what has already been mentioned in speaking of other varieties; they are frequently congenital, but more commonly are unnoticed at birth, making their appearance soon after, and, as they are unnoticed, they probably do not exist, for the inspection bestowed by nurses and mothers upon new-born infants is generally a pretty thorough one; so that we may safely conclude that commonly the *tendency* rather than the disease itself is congenital. There are no facts to show that this tendency is hereditary.

Pathology.—The best account of the pathology of these tumors which I have been able to find is that contained in Paget's "Lectures on Surgical Pathology," from which, and various other sources, the following description is compiled:

The general appearance of the substance of one of these tumors resembles more than any thing else the corpus cavernosum or spongiosum of the penis, with which and similar tissues it has been compared for purposes of description from the days of Bell until now.

The opportunities for the study of these growths have not been very frequent, as the treatment undertaken for the cure of the disease generally destroys its value as a specimen, but enough minute examinations of its structure have been afforded pathologists to have made out very clearly the following facts:

In the first place, all the vessels going into these tumors are very considerably enlarged, and from the fact that those that are naturally so small as to escape notice are now of some size, they seem to be multiplied, but whether there be any multiplication of vessels on the outside of these growths or not, one thing is certain, that is, that in their substance there is vascularity to a very extraordinary degree, and this constitutes their chief peculiarity. The vessels in the tumor itself are both very much enlarged in size, and very much increased in number; as soon as they enter they divide into innumerable branches and twigs, which anastomose with one another in the freest possible manner, sending cross branches of communication from one to another in every direction, and being convoluted and twisted together into an extricable maze, so that it is impossible to separate them one from another, or trace any individual vessel far into the mass.

Besides this, these vessels, whether originally venous or arterial, become very much dilated, and their coats thin and uncontractile, and all distinction between the two classes of vessels lost. Again, where two of these vessels lie parallel and in contact, the coats between the points of contact become absorbed, and the two vessels thrown into one, and as this proceeds for some distance, here and there short anastomotic branches become occluded but not absorbed, and remain stretched across the sinuses like glistening fibrous septa, and thus we have formed true blood-spaces rather than blood-vessels, and an almost exact imitation formed of the natural erectile tissue.

This at any rate is the result—the kind of tissue and the structure actually seen, and the above is the probable mode of its formation. To make the analogy between this adventitious erectile tissue and the normal more apparent, let us remember that the so-called power of erection in the latter does not reside so much in the tissue itself as in the vessels which under certain stimuli pour their blood into it, and the apparatus of muscles, etc., by which its return is impeded. In the interstices between these dilated vessels and blood-spaces we find a dense fibrous connective tissue, and numerous unenlarged vessels, and over all frequently an investing capsule.

Two curious facts bearing upon the theory of the formation of this tissue deserve to mentioned here: the first is that frequently two vessels lying side by side will be found, the contiguous walls of which have given way and communicate only in one spot, the process of absorption appearing to have only just commenced, or to have been permanently arrested; the other is, that Mr. Paget has found in many of the smaller vessels pouch-like bulgings, or sacculations of their walls, showing their tendency to yield and form larger blood-areas, in which the circulating fluid will move more slowly. We have spoken already of the tendency of these tumors to undergo cystic degeneration, and John Bell mentions with surprise that many of the cases that came under his observation, which had previously shown signs of great vascular activity, after a time lost these characteristics, and when they were removed gave rise to scarcely any bleeding, and were found to be mere cysts filled with a clear or sanguinolent serum.

The explanation, and it can scarely be doubted the correct one, which is given of such occurrences, is, that the process of dilatation and merging one into another of the vessels and sinuses has gone on in the centre of the tumor to such an excess that a large central cavity has been formed, which, by the formation of a clot, being cut off from the rest of the tumor, has derived fluid contents either from the serum of its own contained blood, or by endosmose from the surrounding vessels, the clot finally disappearing from solution and absorption.

We meet with accounts by various authors, of tumors partly cystic or solid, but either surrounded by or in contact with lobes of erectile tissue, which, though described as if originally of this composite structure, were more probably true erectile tumors which had undergone the peculiar change we have been describing. Erectile tumors are also subject to atheromatous or calcareous degeneration, but this is not so common as the cystic.

They are also said occasionally to take on cancerous action, but the modern instances of this are very few, and not entirely unambiguous, and the older relations which might seem to support such an opinion must be received with caution, from the necessary difficulty of establishing an accurate diagnosis of cancer before the microscope was used in such investigations; and from the fact also that before these erectile tumors themselves were carefully studied, many no doubt, like all other serious and alarming growths that were ill understood, were called cancers.

The account which has just been given of their structure is typically true only of the subcutaneous nævi or venous erectile tumors. But its main features are essentially unchanged in all the varieties. The true aneurism by anastomosis is more arterial in its character, is entered by active pulsating arteries, sometimes in great number, is made up less of dilated vessels and blood-spaces, and more of convoluted arteries, hence its stronger pulsation and alarming hæmorrhages. The cutaneous nævi are composed of exaggerated capillaries, and minute vessels not strictly capillary, in the rete mucosum of the skin, and this capillary activity may not be sufficient to leave its mark in the permanent enlargement of vessels, but only to provoke the deposit of pigment. Once more let us remark, for it is important to keep it in mind, that the description both of the symptoms and the pathology of this disease is embarrassed by the fact that any two or more, or all the varieties which are found isolated in certain cases, may in others be combined, and then of course there will be a blending and mixing of the different pathological conditions and characteristics.

Treatment.—We now come to the most important and interesting part of our subject, the treatment. And if there is any surgical affection for which more, or more various, modes of treatment have been devised, suggested, or practised, I must confess I cannot tell what it is.

The multiplicity of the modes of treatment recommended in these affections arises, in the first place, from the fact that they are not always so easy to get rid of as one might suppose; and in the second place they vary so much in their nature, size, and situation, that they always have taxed, and always will occasionally tax, to the utmost the ingenuity and resources of the practical surgeon, and at times baffle the best-directed efforts of his skill. The first question is, whether it is always worth while to treat a nævus at all, or not; they sometimes go away of themselves; sometimes, being out of sight, and quite stationary, they are neither painful nor inconvenient.

But such cases are exceptional, never to be expected, and form no guide for practice; it is therefore, as a general rule, the surgeon's duty, except in the case of strictly cutaneous or pigmentary nævi, to advise as well as practise their extermination by some means or other. In the case of these cutaneous spots he need never interfere unless requested to do so, as they are mere blemishes or deformities; and, in undertaking any treatment for them, let him consider well the amount of deformity he is likely to occasion by his treatment, and it seems to me that, except in a few special cases, he will rightly conclude that the nævus is the lesser evil of the two.

In order to give a "bird's-eye view," as it were, of the *extent* of this subject of treatment, I will first present a catalogue of most of the methods that have been proposed, and then point out the applicability of those which I conceive to be applicable at all. This list contains all the methods mentioned in the extensive catalogue of Malgaigne, in his "Operative Surgery," and of Birkett in the "Medico-Chirurgical Transactions," and many others besides; indeed, it is as complete as my opportunities enable me to make it, and, if it does not make mention of every procedure ever proposed, it certainly does of all the more important ones; and will, I believe, be found more complete than any other on record.

CLASS I.—*Means for inducing Atrophy.*

1. Lick the tumor daily with the tongue. (Old woman's remedy.)
2. Compression: *a.* By collodion; *b.* By plaster of Paris; *c.* Bandage and compress; *d.* Do. combined with cold.
3. Astringent or refrigerant applications; do. combined with pressure, recommended by Abernethy. Strong solution of alum constantly applied. (Bransby Cooper.)
4. Congelation, by Arnot's method, or ether-spray.
5. Ligature of the vessels of supply.
6. Ligature of the main artery going to the part.
7. Circular incision round the base of the tumor. (Physick, Wm. Lawrence.)

CLASS II.—*Means for exciting Inflammation in the Tissue of the Nævus, and thus obliterating its Cells and Vessels.*

8. Seton; recommended by some to be dipped in croton-oil, solution of nitrate of silver, or other irritant.
9. Acupuncture.
10. Subcutaneous laceration, first advised by Marshall Hall.
11. Incision and insertion of sponge (compressed?).
12. Cauterization with nitric acid, caustic potash, chloride of zinc, etc. Guersant strongly favors the Vienna paste.
13. Injection of stimulating or coagulating solutions, such as perchloride or persulphate of iron, lactate of iron, corrosive sublimate, sulphate

or acetate of zinc, tannin, alum, muriate ammonia, liquor ammonia, chlorate of lime, nitric acid dilute, nitrous ether, etc., etc., *ad infinitum.*

14. Puncture and insertion of probes coated with nitrate of silver. (Brodie.)
15. Vaccination.
16. Inoculation with hospital-pus. (Olivier.)
17. Punctures with a lancet-point dipped in croton.oil.
18. Application of croton-oil externally.
19. Blisters dressed with ferri persulphate. (Guersant.)
20. Actual cautery.
21. Hot needles thrust into the growth.
22. Galvano-puncture, and electrolysis.

Class III.—*Entire Removal of the Growth by*—

23. Excision. (John Bell.)
24. Amputation of part affected, as lips, prepuce, labia, fingers, etc.
25. Ligature, applied in great variety of ways.

Class IV.—*Cosmetic Treatment.*

26. Tattooing, recommended by M. Pauli.

Some of the methods of treatment mentioned under each of these heads are worthy of notice, and are applicable to some particular cases, and we propose to pass them in rapid review. The plan of licking the nævus every day is certainly a very simple one, but we had supposed that this surgical expedient had gone out of fashion since the days of Lazarus, and do not advocate its revival.

Compression, which at first glance would seem to be a feasible and useful plan of treatment, has proved practically to be of very little benefit; indeed, in a number of instances, has seemed to irritate the growth, and stimulate it to more rapid increase. In very small tumors, or mere vascular specks on the skin, the pressure of a contracting coat of collodion or styptic colloid might be tried with hopes of success: no doubt the small nævi that have sometimes disappeared, apparently spontaneously, from various parts of the body may have been dispersed by the pressure of the clothes. Pressure may sometimes be a valuable *adjuvant* to other treatment, and there is a class of cases to which no other is applicable, viz., those in which a superficial nævus occupies the whole or nearly the whole of the extremity. Mr. Cooper Forster describes and figures such a case, in which a nævus occupying the whole length of one arm had nearly disappeared under careful bandaging.

One would hardly expect much from refrigerant or astringent applications in this disease, but Abernethy succeeded in dispersing nævi of considerable size by cooling lotions; and Bransby Cooper relates a cure accomplished by keeping the part diligently wet with a saturated solution of alum. Notwithstanding such indorsements, the treatment is hardly to be recommended when we have so many more reliable resources at our command; nevertheless, in cases of excessive timidity on the part of the parents it might be tried, and, as long as the tumor was not increasing, could do no harm, if it did no good.

Congelation, by Arnot's method, has been advised, but I am not aware that it has ever been put in practice; the obvious objections to it are, that it must be more or less painful, and at the same time very uncertain. The application of ether-spray, which is a very similar agent, I have not seen recommended in these cases, but have taken the liberty of adding it to the category of possible remedies myself.

The ligature of the various vessels supplying one of these tumors is a mode of treatment applicable to but few cases, and in those is almost the only means that can be practised, or at any rate is generally demanded in addition to any other that may be used. In large or very active tumors, which for any reason it is impossible to remove or ligature *en masse*, and to which any milder treatment would only be a useless aggravation, and in those cases where masses of erectile tissue with enormously enlarged vessels cover the entire scalp, this is one of the only feasible plans; it may or may not be combined with ligature of the main trunk going to the part, or other means as *adjuvants*. The ligatures in these cases, and they may require to be very numerous, may be applied in either of the three following ways:

1. The vessels may be separately cut down upon, isolated, and tied; this is often, on account of their number, not only a very tedious, but also a dangerous proceeding.

2. A second plan is to pass a flat, curved needle threaded

with the ligature under each of the vessels to be tied, entering on one side as closely as possible without the risk of wounding the vessel, taking care to carry the needle under it, and if possible only *just* under it, bring it out on the other side as close to it as it may be, draw the ligature through, and either tie skin and all, or, making a superficial incision to receive the ligature, avoid including the skin. Perhaps this procedure would be better and more easily accomplished with a needle mounted on a handle and having the eye at its point, to be threaded after passing under the vessel, and pulling the ligature after it in the act of withdrawing.

3. A third method is to pass straight pins or needles under these vessels and twist a ligature tightly over them, figure-8 fashion, after the method of the hare-lip suture as it is called (an abominable device, by the way, for hare-lip, however useful here).

The second of the methods is probably the best—at least, in the majority of cases, it is the easiest, the shortest, the safest, and the surest; but there are small tumors which it is advisable to treat with ligature of the vessels of supply, in which it is all-sufficient to pass needles under them, and apply a twisted figure-8 suture, which may be left *in situ* twenty-four or forty-eight hours and the needles then withdrawn. In whatever way the ligatures are applied, except in the slight cases just referred to, they must be left till they separate themselves by sloughing, and the cases need to be very closely watched, as their separation is apt to be attended with hæmorrhage, which may be dangerous or even fatal; this accident is less likely to occur where the first or second mode of proceeding is resorted to than when needles or pins with twisted suture are used.

A very remarkable and interesting case of the kind now under consideration is described and figured in Fergusson's "Practical Sugrery," p. 133, and as the account is short I will quote it entire: "A young woman, about twenty-two years of age, became a patient of my friend Mr. Robert Storks. The vessels of the scalp, particularly on the left side, were enormously distended. Both arteries and veins were involved, but the veins seemed most affected. The vessels were slowly increasing, and the girl felt unfit for her usual occupation as a housemaid. Ligature of the common carotid was now resorted to by Mr. Storks, and considerable improvement followed. Pressure on the scalp by elastic caoutchouc bands had now more effect than before; but still the veins continued of vast calibre, and ere long arterial pulsation could again be felt.

"The patient could not resume her duties, and earnestly desired that if possible something more might be done. She then came under my care in King's College Hospital, when I adopted the following plan: long needles were passed under and through the vessels at various prominent points. These were sufficiently strong to bear the pressure made by twisting strong threads about them over the included vessels and scalp, and it was resolved to leave them until there seemed necessity to interfere. At some points sloughing occurred; elsewhere ulceration loosened the needles, and throughout the parts interfered with there were inflammation and induration.

"In about three weeks a result took place which I had anticipated: violent hæmorrhage came on—happily during my visit to the hospital. Pressure with the fingers was adopted till the old needles were withdrawn, and fresh ones introduced, when threads were again applied and the bleeding was arrested.

"Further inflammation and obliteration of vessels ensued; hæmorrhage, which occurred on several subsequent occasions, was arrested in a similar manner by my assistants, who were constantly on the alert at periods of danger, and the result of the practice was the total obliteration of all the formidable affection, with firm cicatrices marking where the sloughing and ulceration had been."

Such a case as the above illustrates pointedly the length of time as well as the variety of means and ingenuity these formidable affections require in their treatment, and the danger which surrounds it.

Many similar cases may be found in surgical works, and in particular two or three very interesting ones in J. Mason Warren's "Surgical Cases and Observations." In cases in which it seems hopeless or desperate to attack the disease by local means, or by local means alone, the main artery supplying the part on which it is situated may be tied; this may be done in any suitable situation, as on the limbs, etc., but the carotid is the vessel which has most frequently been ligatured in these cases. The carotid has been tied in upward of twenty recorded cases for erectile tumors, with complete success in many instances, among which I may refer to a case recorded by Dr. David L. Rogers, of New York, in a volume entitled "Surgical Essays," and two of erectile tumor of the orbit by Sir William Lawrence. Both carotids have been tied for this disease at least six times—once by Kühl, of Leipsic, once by Mussey, of Cincinnati, once by Warren, of Boston, and in three cases in which I cannot ascertain the name of the operator. In all these cases the patients ultimately recovered, though not in some, as in Warren's case for instance, until a variety of other treatment had also been put in practice.

It is almost needless to say that, when both carotids are tied, an interval of some weeks should be allowed to elapse between the two operations.

The last procedure which I have to speak of under my first class is that of incisions extending all around the base of the tumor, which are to extend to its very bottom and to be crammed with sponge to restrain hæmorrhage, and the mass left to slough out. This plan has been recommended by Lawrence, executed by Physick, and combined with ligature by Gibson, of Philadelphia, and, though it may be applicable to a few rare cases, is not to be advised for general imitation.

The second division of my classification of treatment includes the means which are intended to excite inflammation in the tissue of the nævus, and thus obliterate the cells of the new growth. Seton—this is a favorite plan with some, among whom are Curling, Miller, and Druitt, but is discarded by most modern surgeons, as those tumors likely to be cured by it may be better dealt with in a variety of other ways. No directions need be given for the application of setons here, as the method does not differ materially from that to be observed when they are used for other purposes; only care should be taken that the threads be thicker than the needle which carries them, to avoid bleeding; the direction sometimes given to smear them with croton-oil, or a solution of caustic, is a useless refinement.

Acupuncture was recommended, and has chiefly been practised by Lallemand, who on one occasion used the enormous number of one hundred and twenty needles. This plan consists in introducing pins or needles into the tumor in various directions, and leaving them in until loosened by suppuration.

Subcutaneous laceration was first recommended by Marshall Hall, and, in small nævi favorably situated, is an excellent plan of treatment. It is done by sliding a small tenotome, or broad cataract-needle, under the skin at some distance from the margin and into the substance of the tumor, and then moving it about freely in every direction, so as to break up as completely as possible the vascular tissue; it may be then withdrawn and the aperture closed with a bit of plaster or not, and the result left to absorption, which will remove the tumor in a few weeks. I have practised this method with success in several instances.

Incision and the insertion of sponges is a plan to be mentioned only to be condemned; it is dangerous in the execution, and has generally been useless in the result, at most only dividing the tumor into sections by the scars it produces, and leaving portions undestroyed, which may grow all the more rapidly from the interference.

Cauterization with nitric and other strong acids, caustic potash, chloride of zinc, etc., has been recommended, and frequently practised, but the plan is an objectionable one, as it leaves disfiguring scars, and may lead to troublesome hæmorrhage on the separation of the eschars. If applicable at all, it is to the strictly cutaneous nævi, which, no matter how extensive, may be removed in detail by the application of the caustic to successive portions of the mark, but at the expense of glistening, seamy scars.

One writer says he generally asks such patients whether they would rather have a red mark or a white one, and, if they seem in doubt, advises them to prefer the former.

Nevertheless, certain small cutaneous nævi may just as well be removed as not, and, if not conveniently situated for the knife, caustics are the thing to do it with. Among the number of agents advised for this purpose, nitric acid is one of the best; Guersant strongly advocates the Vienna paste.

The next method we have to consider is that by the injection of stimulating or coagulating substances, to destroy the vitality of the tumor, coagulate the contained blood, and facilitate its absorption. This plan was first advocated by Mr. Lloyd, in the *Medical Gazette* for October 1, 1836, and was at first remarkably well received, and many seemed to think that *the* mode of treatment above all others was found at last; but several deaths soon followed its promiscuous employment, Mr. Lloyd himself being the first to lose a patient. At first, of course, an attempt was made to fix the danger upon the peculiar substance used, but, as almost every substance employed has been followed in some instances by convulsions or death, that cannot be the true explanation; the substances injected have been as various as the ingenuity of surgeons could suggest, and we need not go over the list here. One of the most singular suggestions is that of Dr. Brainard, of Illinois, who recommends the lactate of iron, because, as he says, it is one of the natural constituents of the blood. No doubt cures may be effected by almost any of the stimulating fluids advised, but, as there are many methods much more certain in their operation and without their danger, the treatment by injections has fallen into deserved neglect. If any one is determined to use them, the persulphate of iron or the perchloride is to be preferred, and it is to be introduced at various points, in small quantities, and it would perhaps obviate danger if the substance of the tumor were first broken up with a needle.

Punctures with a probe coated with nitrate of silver were strongly recommended by Sir Benjamin Brodie, and succeeded well in his hands, and are said to leave remarkably little scar. Vaccination over the nævus, or around its margin, is a device that has always been more or less popular, and is much in use even now, but it seems to me to be a very unreliable resource, and of course limited in its application to small superficial tumors. If such a spot should exist in a convenient place in a child who had not been vaccinated, by all means let it be tried; if it fails, other treatment can be used afterward.

[1] See a very interesting article on vaccination for the cure of nævus, by Dr. Robert P. Harris, of Philadelphia, in the *American Journal of Obstetrics and Diseases of Women and Children*, for May, 1871.

Inoculation with hospital pus was suggested by Olivier, but has never been tried, and it is to be hoped never will be.

Tattooing is a most ingenious method of M. Pauli for the obliteration of strictly cutaneous nævi, claret-marks, etc., and, though I fear it is more ingenious than practical, it certainly deserves notice. We know that soldiers and sailors tattoo their arms and breasts, and impress and trace on them words and figures that neither lotions nor even blisters can efface. M. Pauli thought that, if he could color the skin blue or red, he might in like manner color it white in cases in which a superficial nævus has given it the tint commonly called wine-spot; he says he has already in this way obtained some success. I need not describe the plan pursued by sailors in their tattooing, as it is undoubtedly familiar to all.

To apply this plan to the nævus the parts are first washed with soapy water, and then rubbed to make the blood penetrate into the extreme ramifications of the erectile tissue. The skin is then extended and covered with a layer of color, of the same shade as the healthy skin, made with white lead and vermilion, and pricked with needles fastened into a cork, dipped from time to time in the color. When the nævus is very extensive, we are directed to tattoo only a part at a time, to avoid considerable swelling.

The difficult point, according to M. Pauli, is the choice of color. It requires almost the practised eye of the painter. Generally it should be lighter than the tint we wish to obtain. When the spot is on the cheek, it is necessary to give it a more rosy hue. (A very ingenious application of this process of tattooing has recently been recommended by Wecker, of Paris, for disfiguring opacities of the cornea.)

Punctures with a lancet-point covered with croton-oil, free external application of croton-oil, of blisters, of blisters dressed with persulphate of iron, etc., have been advised, but I cannot see any possible inducement for such applications, for they must be very uncertain, and, if used freely enough to produce the desired effect, leave considerable scar.

The application of the actual cautery is a most valuable method of treating nævi, and has a wide, perhaps as yet unascertained, range of applicability. I would refer to a paper on the subject by Dr. B. Dawson, in the *American Journal of Obstetrics*, etc., for November, 1871, as illustrating its use better and more forcibly than any thing I can say. The actual cautery may also be needed in any of these cases as accessory to other means for the purpose of restraining hæmorrhage. A case is on record in which a vascular tumor of the anterior nares, which bled alarmingly, was effectually destroyed by its application. Of course it would be absolutely necessary in any similar case, or in some inaccessible tumors of the mouth.

Thrusting hot needles into the tumor, which is but a modification of the actual cautery, is, in all which are of moderate size, one of the very best means of treatment, and, though not much spoken of in text-books, is to be recommended as safe, certain, and easy of application. I have applied it successfully myself, and seen it done by others a great many times.

The needles, set in handles and heated to a glowing white heat in the flame of a spirit-lamp, are to be thrust into the tumor, and moved freely about in its substance, not being withdrawn till they have become cool, which they do very quickly; several needles may need to be applied, but should all be entered at the same spot, or at least as few points of entrance made as possible, for it is at these points that the principal scar is left. The application may have to be repeated once or oftener, but, if time enough be allowed to intervene to admit of the full effect being produced, it will often be surprising to notice how much greater this will be than was at first expected. I have found it a very convenient way of procuring suitable needles, when time did not permit of a visit to the instrument-makers, to buy some ordinary crochet-needles in wooden or ivory handles, and have the little hook ground off; the points need not be sharp, indeed, they are better blunt.

One slight drawback to the use of hot needles is, that they cool so quickly; this is obviated by heating them with the galvanic current, a method, however, which cannot come into general use while the necessary apparatus is as costly and cumbrous as at present. Electrolysis boasts some gratifying successes, and is well worthy of further trial.

We come now to the third class of treatment, that which proposes the entire removal of the new growth, by excision, amputation, or ligature *en masse.* Excision, or enucleation, as it is called by Mr. Teale, of Leeds, is applicable to only a few cases, of isolated, deeply-seated tumors, in convenient regions, and not surrounded by many active vessels. If a small nævus should occupy the edge of the lip, it might easily be removed by cutting clear of it with a V-shaped incision, and bringing the edges together with suture as in a case of epithelioma. Or when, as is sometimes seen, the entire lip is swollen, purple, and telangiectetic, a similar operation for the removal of a portion of the redundant and diseased tissue, as has not long ago been done by Dr. Buck, of New York, might result in great improvement. There is a rare class of cases called pendulous nævi, which may easily be removed in this way. But, after all, excision is not applicable to the treatment of many cases of nævus or erectile tumor, and is never entirely free from danger, as the record of many lives lost by it plainly shows.

Mr. Liston relates the case of a surgeon who attempted to remove one in his own house, and the patient, a child, died in its nurse's arms. I am sure we shall all agree with him in his remark that "this was quite an awkward kind of occurrence."

In some cases, where the disease invades the whole of an extremity, amputation is the only resource. A very remarkable case of this kind is related by Dr. J. Mason Warren, in which the disease began as a round pulsating tumor in the palm of the hand, by which it had the appearance of being firmly grasped; amputation was advised, but declined; the patient returned after some months with the disease very much increased; amputation was again advised, and again declined; she returned again after a longer interval, when the disease was found to have involved the whole limb, from the fingers almost to the shoulder. Being now convinced that there was no other help for her, she consented to have the limb removed, which was done, and she made a good recovery.

There is a cast of an arm similarly diseased in the museum of Guy's Hospital, and Mr. Ferguson relates a case in which the leg was removed for the same reason. Before amputating in such cases, one should be prepared to expect and encounter unusual, perhaps severe, hæmorrhage from the enlarged vessels.

The last method of treating nævus to which we refer is, that of the application of ligatures to the tumor itself.

This method is almost universally applicable to all the subcutaneous and most of the mixed cases of erectile growth. There are a few cases in which a simple ligature applied round the base of the tumor is sufficient, but in most cases it is better to pass a needle threaded with a double ligature under the base of the tumor, and, dividing the loop, tie each ligature on either side, thus bisecting it, as it were.

If this is not sufficient to include the whole of the growth, two such ligatures may be passed at right angles to each other, and the tumor tied in corresponding sections. These ligatures are most conveniently passed by means of long needles firmly set in handles, and having the eye at the point (a country doctor, away from the conveniences of the city, and unprovided with such needles, may find, as I have done, a very tolerable substitute in ordinary sewing-machine needles). If two needles are used, it is recommended that the first be passed without any thread, and the next one *armed* and passed under it, after which the one first introduced may be threaded and withdrawn, bringing the thread with it; this precaution is taken to prevent the second needle cutting the thread of the first, or the two threads from interfering. If a single or double ligature, as described, will not be enough, a sufficient number must be passed, or one long double thread passed through the different portions of the tumor successively, and then the loops being cut on both sides, or on one only, the different segments may be separately and successively tied; it has been advised by some to color one half of the ligature, and then, as the colored and uncolored portions are to be tied together, there will be no need of stopping or pulling on the threads before tying, to be sure of the right ones.

This plan and various others are laid down and illustrated in most of the text-books of surgery, by reference to which they can be better and more easily understood than by any description unassisted by diagrams. By some authors we are directed to divide by superficial incisions the portions of integument intervening between the ligatures, before they are tightened, and it is claimed that by this plan both pain and scar are diminished, while the strangulation is more complete, and the mass drops off more speedily.

The really important points about the application of the ligatures are, to be sure that they are strong enough, and then to tie them as tightly as possible. It has been proposed to make a crucial incision over these tumors and reflect the flaps, and then tie them; this of course could only be done where the integument was not only uninvolved in the disease, but freely movable over the tumor, and even then the bleeding is said to have been sometimes very severe and even alarming; and I should think that, having gone so far, one might almost as well cut the thing out and have done with it.

Subcutaneous ligation is a very ingenious and beautiful method which has been proposed, but one, I should think, by no means easy of execution. It is performed by means of large curved needles carried under the skin round the tumor, and across and beneath it. I beg to refer to the various works on surgery for the details of this process, which it is very difficult to describe or to understand without the aid of diagrams. Finally, it has been proposed to strangle these tumors without pain, by ligatures gradually tightened by elastic extension, or by means of a screw; but, as these suggestions are more ingenious than practical, a mere notice is all they demand. In conclusion, in addition to the ordinary text-books, allow me to refer to Mr. Cooper Forster's work on the "Surgical Diseases of Children," for a capital essay on these affections, and to J. Mason Warren's "Surgical Cases and Observations," for several very interesting and extraordinary cases.

Multifarious as are the means of treatment at our disposal, there are no cases which need more judgment, common-sense, adaptation to circumstances, and courage, than some of these extreme cases of erectile disease. And it is as encouraging as wonderful to see what extensive, and obstinate, and perplexing cases may be overcome by the perseverance and patience of a surgeon who, while neither rash nor presumptuous, is yet determined not easily to be deterred or baffled.

ART. IV.—*Direct Galvanization of the Brain.* By JOHN J. MASON, M. D., Lecturer on Electro-Physiology and Therapeutics in the Bellevue Hospital Medical College.

IN the last number of the NEW YORK MEDICAL JOURNAL appeared an article,[1] in which its author advocates a form of electrical treatment, whereby the brain is included within the battery circuit.

Remak first called attention to this direct application of the electric fluid to the brain, although he gave to the poles a different position from the one recommended in "Central Galvanization."

In most, if not all, works on electro-therapeutics since the time of Remak, this treatment has been advised, and time enough has elapsed therefore to create a strong opposition to, as well as advocacy of, this method of using the electric current. It is at least time that both sides of the question should be heard.

The most thoroughly independent and logical work on medical electricity, which has thus far appeared, is perhaps that of Dr. E. Cyon,[2] Professor of Physiology at the University, and at the Academy of Medicine of St. Petersburg; Lauréat of the Institute of France, etc.

Prof. Cyon, after a long experience in the application of electricity as a remedy, both alone and with men like Remak, with whom he was personally acquainted, came to the following conclusions, viz.: 1. That electro-therapeutists had never yet made a serious effort to be guided by physiology; 2. That, in consequence of this reluctance on their part, one of two courses became a necessity, "either to renounce altogether the rational application of electricity, or for some physiologist, imitating the example of Mohammed when the mountain refused to go to him, to volunteer to lay a scientific foundation for electro-therapeutics."

My own experience on this subject has been considerable. A residence of three years abroad, where was afforded me the opportunity of studying with such men as Benedikt, Meyer,

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[1] "Central Galvanization," by Dr. A. D. Rockwell, p. 475.

[2] "Principes d'Électro-therapie," Paris, 1873.

Du-Bois Reymond, and Rosenthal, of necessity gave me a broad field of observation. I have no desire, however, to give my own opinion at present, nor is it the object of this article to detail either my own cases, or those of any one else, but rather to present to the readers of the JOURNAL the views of Prof. Cyon.

These views I shall give briefly, in the form of a translation made from the original French text; and let it be remembered that they come from one who, before devoting himself to physiology, had a large experience in pathology:

Page 190, § V. *Galvanization of the Brain.*—"Let us now pass to galvanization of the central nervous system. It was Remak who introduced electrization of the cranium into electro-therapeutics, to produce irritation of the brain. The following is the method of its application for which one always employs the continuous current. The zinc-pole is placed upon one of the frontal eminences, and the copper-pole over the cervical vertebræ, or both poles may be placed upon the two mastoid processes."

A page is here devoted to an account of Erb's experiment, proving that the brain-substance would be traversed by a current under the above circumstances.

"According to our views, the galvanic treatment of the cranium may be completely abandoned, and the following are the reasons for our opinion. When we pass a current through the brain, we can have no other aim than that of causing an irritation of some one of its parts.

"Now, if we consider, in the first place, that it is only in very rare cases that we are able to indicate with any degree of assurance the seat of a cerebral disease; in the second place, that it is only in a very small fraction of these very rare cases that irritation of the brain can be of any advantage; and in the third place, that in these exceedingly rare cases we are unable even approximately to limit the irritation to the desired region of the brain—if we take all this into consideration, we cannot but renounce, as I have just done, electrization of the cranium.

"We have seen that it is impossible to irritate nerves and muscles singly, without bringing the region of the greatest density of the current on the points which we wish to affect.

But it is impossible to do this in the case of the brain. In reality, it is within its central mass that we find the only organs (corpora striata, optic thalami, pons Varolii, etc.) which can furnish us with a diagnosis at all certain, when they are affected by disease, while the portions of the brain which can alone receive a considerable quantity of electricity are situated at its periphery. It would be necessary, therefore, in order to irritate the whole brain at once, to employ very strong currents, so that the electricity might diffuse itself throughout the entire mass.

"All electro-therapeutists agree in regarding the practice of passing strong currents through the brain as dangerous, none of them employing more than from ten to twelve cells of Daniell, and for a very short time (half a minute to five minutes).

"Now, it is utterly impossible that such feeble currents should have the slightest action on the brain, by reason of the immense resistance offered by its mass and the cranial bones.

"To resume, then—either the currents which we wish to employ are too feeble to produce any effect whatever, or they have sufficient intensity, in which case all the parts of the brain are irritated, producing thereby much more injurious than curative effect.

"*All direct treatment of the brain by electricity ought, therefore, to be abandoned.*

"Moreover, we do not know of a single case which can plead in favor of this treatment. All the histories of patients, which apply to this subject, may be reduced to this: A patient presents himself at the office of an electro-therapeutist with symptoms of some obscure nervous affection; the latter hastens to diagnosticate a disease of the brain; it is always an irritation, a patch of softening, or a tumor in the anterior or posterior portion, right or left, of the cerebellum at a distance of so many millimetres from the pons Varolii, etc. Nothing more can be desired by way of precision in the diagnosis. The patient is treated by mild currents through the head, other treatment being employed at the same time, and, if the condition of the patient is improved by chance or by the other treatment referred to, the electro-therapeutist concludes: 1. That his diagnosis has been confirmed, and that there exists a tumor in the portion of the brain indicated; and 2. That the sovereign remedy for such a tumor is a continuous current from ten elements passed through the brain.

"The history of this case is at once published, and a *furore* is raised in the minds of credulous physicians, but distrust of electro-therapeutics is generated in thoughtful minds.

"Such, in general, is the value of observations which are given as proof of the curative effects of this treatment. In the majority of cases we need to satisfy ourselves that the electro-therapeutist has really seen the amelioration in his patient's condition which he notes, and that he has not fished for it in the air. It will be fortunate for us also, when electro-therapeutists are modest enough not to conclude, from such observations, that they have discovered a physiological function for that part of the brain which they have considered as the seat of the disease; those who have not done this belong to a small minority."

One cannot, I think, fail to feel the force of this chapter. While the author strongly discourages the direct application of electricity to the brain as unscientific, he just as strongly advocates its application to the spinal cord, and indirectly to the brain through its vaso-motor nerves. Here, we go hand-in-hand with science, while in the other treatment we but widen the space which separates her from us.

Clinical Records from Private and Hospital Practice.

I.—*Cases of Amenorrhœa resulting from Undeveloped Uteri.* Reported by William H. Baker, M. D., Senior Assistant House-Surgeon New York State Woman's Hospital.

Insufficient attention has been directed to want of development of the uterus as a cause of amenorrhœa. This has been noted where there has been evidently an undeveloped state of the other organs connected with reproduction, but has been lost sight of, in a large number of cases, where there has existed the normal condition of the mammæ and the external organs of generation.

Galvanism, or electro-magnetism, applied as a direct stimulant to the development of the uterus, has but recently attracted the attention which it seems to deserve from the profession. A report of several cases, illustrating the relative advantage of these two kinds of electricity, will be found in the *Boston Medical and Surgical Journal*, for August 29, 1872.

The three additional cases given below have come under my observation in the New York State Woman's Hospital, where these agents have been used:

CASE I.—*Service of* Prof. E. R. PEASLEE. J. E. JANVRIN, M. D., *Assistant-Surgeon.*

The patient was unmarried, and twenty years old. The menses were very irregular, having occurred only six times; the flow was then very small, and accompanied by considerable pain. She was very anæmic and hysterical, but was well developed in every particular except the uterus. There was some leucorrhœal discharge.

Upon examination *per vaginam*, the uterus was found in the natural position, the cervix was very small, and the os ulcerated. This latter condition accounted for the leucorrhœal discharge noticed above. The probe passed but one and a half inch to the fundus of the uterus.

The patient was at once put upon ferruginous tonics. The compound tincture of iodine was applied locally to the ulcerated surface of the cervix, which soon healed.

Sponge-tents were introduced into the cavity of the uterus from time to time for a month. At the end of this period, one of Thomas's galvanic intrauterine pessaries was introduced, which continued in position for another month, occasioning no special discomfort.

Her general health suffered from confinement to the hospital wards, and her anæmic condition increased, so that it was thought advisable for her to return home for a season, in order to regain, in a measure, her strength. The pessary was consequently removed.

After three weeks she returned much improved, and the same treatment was continued five weeks, until her discharge from the hospital, January 2, 1873. At this time, although the depth of the uterine cavity had increased to two and one-quarter inches, yet no menstrual flow had occurred.

The patient's general anæmic condition had, undoubtedly, much to do with the non-appearance of the menses. The amount of galvanic force generated by the stem-pessary may not, however, have been large enough to stimulate the development of the ovaries, and to produce the menstrual flow.

CASE II.—*Service of* Prof. T. G. THOMAS. JAMES B. HUNTER, M. D., *Assistant-Surgeon.*

The patient was nineteen years of age, and unmarried. The menses first appeared at fourteen, but they were never regular, occurring at long intervals, and continuing only a few hours. The amount of flow was very small. For five months preceding her entrance to the hospital, they had disappeared altogether, the molimen even not having been noticed. She was a strong, healthy-looking girl. The mammæ and external organs were well developed. The vagina was of normal size, but the uterus was undeveloped, yet in its natural position. The probe passed but one and seven-eighths inch to the fundus. The canal was perfectly free.

Four days after her entrance to the hospital, a sponge-tent was introduced, carried through the internal os to the fundus of the uterus. It was removed in twenty-four hours. This treatment was repeated each week for three successive weeks, when, in addition, a current of electricity from the secondary coil of an electro-magnetic battery was applied, strong enough to produce a decidedly prickling sensation. One electrode was placed upon the lumbar region of the spine; the other to the interior of the uterus. This application was continued for ten minutes. It was repeated three times a week during the patient's stay.

One month after her admission to the hospital, the flow came on, lasting only a few hours. It was quite natural in character. The depth of the cavity of the uterus was at this time two inches. The patient menstruated regularly after this date for the next three months, or until her discharge. The uterus had become fully developed, the probe passing into the uterine cavity two and a half inches.

CASE III.—*Service of* Prof. T. G. THOMAS. JAMES B. HUNTER, M. D., *Assistant-Surgeon.*

The patient, aged twenty-four years, entered the hospital October 24, 1872. She was unmarried, and menstruated first in her fourteenth year; was tolerably regular until fourteen, when, in an attack of severe sickness, the menses ceased. The nature of her sickness, which continued two and a half years, she does not remember. But, although she had enjoyed very good health since the termination of that period, the catamenial flow had not appeared. She had been accustomed to take much exercise, such as riding horseback, rowing, etc. She had a healthy appearance, but her whole manner was like that of a girl of seventeen. Her breasts were undeveloped; her external organs of generation nearly perfectly developed. The vagina was short, the cervix very small, and the uterus slightly retroverted. The probe passed an inch and a quarter to the fundus of the uterus.

From October 27th to December 28th sponge-tents were introduced each week. Up to the latter date, very little, if any, change was noticeable, and no symptoms of menstruation appeared. Seven days later, one of Thomas's intrauterine galvanic pessaries was introduced, but it had to be removed in three days on account of an imperfection in the vaginal portion of the instrument, which produced pain.

January 16*th.*—A current of electricity from an electro-magnetic battery was applied for ten minutes in the same manner as in Case II. Four days later some whitish discharge from the uterus, with symptoms of menstruation, appeared, and electricity was again applied as before, and a hot hip-bath and heat to the feet were ordered.

24*th.*—The discharge noted above, though slight in amount, continued four days, with very little or no pain.

From this time until March 18th, electricity was applied in the same manner as before, three times a week; and at the latter date the patient had some pain in her back and symptoms of menstruation.

March 24*th.*—She had no flow, but the uterus looked congested, and the measurement of the uterine cavity showed an increase of one-half an inch. After each application of electricity, the patient had slightly painful sensations in the region of the ovaries and in the breasts, coming on in paroxysms, and lasting more or less from one application to another.

April 12th.—Faradization of the uterus was continued three times a week, from the previous note. For several hours after the last two applications, the patient was very much depressed and exhausted, and had faint feelings, although the electricity was applied in precisely the same manner as before. At this date, for the first time in ten years, she had a natural flow from the uterus, although very slight in amount.

14*th.*—The menstrual flow continued all the day before, but stopped this day. A current of electricity from eighteen cells of Kidder's galvanic battery was applied, the positive electrode to the lumbar region of the spine, and the negative to the interior of the uterus. The current was continued for four minutes, its course being occasionally reversed. For five hours after its application, the patient felt perfectly well. She was then suddenly taken with faintness, exhaustion, and had every indication of a great nervous shock. Stimulants were at once ordered. The flow began again immediately and continued twelve hours. Ovulation had evidently taken place.

19*th.*—The breasts were now quite well developed. The vagina had increased very much in length. The cervix was larger. The depth of the uterine cavity was two inches. The position of the organ was a little right-laterally flexed. The whole manner of the patient was very much more mature, and she was discharged cured, April 23d.

II.—*Case of Pelvic Hæmatocele; Recovery. New York State Woman's Hospital.* Service of Prof. T. GAILLARD THOMAS. JAMES B. HUNTER, M. D., Assistant-Surgeon. Reported by T. G. WYLIE, M. D., House-Surgeon.

MRS. R., admitted February 4, 1873, aged twenty-eight years; married at twenty. Six years ago she had a miscarriage, cause unknown. Menstruated regularly since then, until three months ago, when she passed one period and had other symptoms of pregnancy. For the last two months has had uterine hæmorrhage, accompanied with much spasmodic pain over the abdomen, extending to the thighs, with painful micturition, followed by tenesmus. Her general health is excellent.

On examination, uterus is found to be very sensitive, and somewhat enlarged, the sound passing three inches.

February 11*th.*—Sponge-tent introduced.

12*th.*—On removing the tent the finger can be passed through the cervix, which feels as though covered with papillæ.

15*th.*—Until to-day the pains were about the same as before the tent was used, but now they are so severe that it is thought best not to use the curette, as was intended, but to await further developments. The pains resemble those of parturition. Pulse 108, temperature 102°.

16*th.*—Pains very severe; morphia given hypodermically. On vaginal examination, a tumor is discovered in the recto-vaginal wall, filling up the *cul-de-sac*, displacing the uterus forward and upward, above the pubic bone. Bearing-down pains, with tenesmus.

17*th.*—Vaginal examination shows that the tumor has increased in size, and is much lower in the vagina, pressing almost against the perinæum; it is softer and more elastic than yesterday; the wall at the lower extremity is thin and sensitive, but there is no doughy feel. Very little tenderness over the abdomen. Pulse 120, temperature 103°.

18*th.*—Feels better. Tumor still softer and more sensitive.

19*th.*—Condition about the same.

20*th.*—Tumor gives fluctuation at the lower extremity. A small trocar of an aspirator was introduced in the lower part from the vagina, and four ounces of bright-red blood drawn off, giving immediate relief.

21*st.*—Patient comfortable.

22*d.*—Feels much better. Pulse 100.

23*d.*—At twelve M. she had a chilly sensation, after which she felt weak and faint. Pulse weak, but not rapid. Stimulants ordered.

24*th.*—Examination shows that the tumor has returned in the same situation, and has a hard feel, as when it first appeared.

25th.—Again had chilly sensation, and feels very weak. Pulse 100, temperature 101°. Tumor is larger and softer.

26th.—Condition about the same. Has been kept easy with opium suppositories.

27th.—Tumor softer. Pulse 96, temperature 100½°. Aspirator again used, and four ounces of red blood evacuated, to the great relief of the patient. After the trocar was taken out, the tumor had not completely disappeared, as after the first tapping, the upper part remaining firm and still displacing the uterus. The blood that was first drawn is still fluid, no trace of a clot being formed after standing a week.

28th.—Feels much better, but is quite weak.

29th, 10 A. M.—Had a chilly sensation, as before. Pulse 94. Flow commenced from the uterus, with a profuse discharge of mucus.

March 1st.—Tumor found small, firm, and flattened, as if being rapidly absorbed. Uterus about the normal position, but fixed.

3d.—Has very little pain; no anodynes are given. Bled slightly at the nose. The discharge of bloody mucus from the vagina continues. Pulse 94, temperature 100⅘°.

19th.—Tumor hardly perceptible. Feels well, and is up and walking about.

Bibliographical and Literary Notes.

ART. I.—*The Science and Art of Surgery.* By JOHN ERIC ERICHSEN. A new edition, enlarged and carefully revised by the author, vol. i., pp. 781, vol. ii., pp. 918, 8vo. Philadelphia: H. C. Lea, 1873.

"ERICHSEN'S SURGERY" has been so long before the profession in this country that an extended notice of a new edition would seem almost superfluous. The present edition, however, enlarged to occupy seventeen hundred closely-printed pages, revised by the author expressly for the American reader, cannot but elicit some notice. We shall, therefore, proceed to analyze some of the practical questions discussed in the work. We are informed by the author that several paragraphs are added to the American edition not embraced in the sixth English edition, from which the present is a reprint.

It is divided, as heretofore, into three divisions—"*First Principles*," "*Surgical Injuries*," and "*Surgical Diseases*."

In Chapter I. are found very good "General Considerations on Operations." We notice one sentence, on page 27, so unusual in professional works, and yet so important, that we introduce it. After calling attention to the weight of responsibility resting upon the surgeon, he says:

"But, having carefully considered each successive step of the operation, provided for every emergency that can by any possibility arise in the course of it, and trusting in Him from whom all knowledge is derived, to strengthen his judgment and guide his hand aright, he will proceed to the performance of his duty with self-reliance, and in the full confidence of being able to effect all that art can accomplish."

In discussing the "Employment of Anæsthetics," bichloride of methylene to induce anæsthesia, the effect being maintained by chloroform, is spoken of favorably. In the event of dangerous symptoms supervening upon the use of anæsthetics, among other things, electro-magnetic electricity is recommended, applied "over the heart and diaphragm through the spine." The application of the electrodes, on either side of the neck, to the phrenic nerves, as recommended by Meyer,[1] would perhaps prove more effectual.

Chapters II. and III. are devoted to "Amputations and Disarticulations." As is well known, Mr. Erichsen, other things being equal, advises the muscular flap operation. We shall not discuss this question further than to express our preference for integumentary flaps under ordinary circumstances. No mention is made of amputation at the elbow-joint.

The author, while discussing "Inflammation" (Chapter IV.), joins issue with those who regard *deposit* as the determining condition in the process. The swelling is induced by hyperæmia and effusion, cell-hypertrophy not being mentioned. As the author regards hyperæmia as the principal phenomenon, the principles of treatment in the robust are, to reduce the amount of blood in the part and render it aplastic. The various phenomena are attacked as a *disease*, the lancet, mercury, etc., effecting the purpose. In inflammation attended with low states of the system, however, adequate support is recommended. We have already, in this JOURNAL,[1] expressed our dissent from this *antiphlogistic* treatment from principle, in common with most American writers of the present day. The explanation of the action of opium in controlling inflammation, by arresting osmosis and cell-hypertrophy, we believe, was first given in the *Buffalo Medical Journal.*[2]

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[1] "Medical Electricity," second American edition, p. 430.

Our author credits the discovery of the migration of the white corpuscle to Addison, of England, in 1845. Recklinghausen[3] and Frey[4] mention Waller as the discoverer, in 1846. By reference to Ashhurst's "Surgery,"[5] we notice mention of Addison's "Experimental Researches," etc.,[6] in which it was "maintained that 'pus-corpuscles of all kinds are altered colorless blood-corpuscles; and that . . . no new elementary particles are formed by any inflammatory or diseased action.'"

Arriving at the second division of the treatise, that embracing "Surgical Injuries," it is said, on page 159, that "shock consists in a disturbance of the functions of the nervous system, whereby the harmony of the action of the great organs of the body becomes deranged." The *post-mortem* appearances, it is said, are not characteristic; the heart and venous system are usually filled with blood. Dr. Lidell[7] says:

"We do not claim that the so-called 'shock' is ever synonymous with nervous apoplexy, for the range of functional disturbance is much more extensive and involves many more organs in the former than in the latter. What we do claim is, that the cerebral phenomena which are present in bad cases of 'shock' are analogous to those which occur in cases of nervous apoplexy, and that in both instances the proximate cause of these cerebral phenemena is the same, namely, anæmia of the nerve-fibres and ganglion-cells of the brain, resulting from disturbance of the vaso-motor system."

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[1] *Vide* No. for November, 1872. Review of Heslop on "The Abuse of Alcohol."

[2] Review of Ashhurst's "Principles and Practice of Surgery," by C. H. Richmond, Livonia, N. Y., February, 1872, p. 276.

[3] Stricker's "Histology," American edition, p. 244.

[4] "The Microscope," etc., American edition, pp. 245, 588.

[5] P. 40, foot-note.

[6] "Transactions of the Providence Medical and Surgical Associations," vol. xi., pp. 247–253.

[7] "Treatise on Apoplexy," p. 220.

In Chapter XIV. the "Arrest of Arterial Hæmorrhage" is fully discussed, a notice of all the means at present known being embraced, including the methods by torsion, ligature—ordinary silk, antiseptic and metallic, and acupressure. Preference is given, ordinarily, to the common silk or whipcord. Mention is not made of spirit as an application for oozing following an operation. It is usually effective, and is not attended with liability to suppuration, are as ordinary styptics.

Chapters XX. and XXI. are devoted to the consideration of "Fractures." Upon this subject we shall endeavor to speak with caution, lest we be misunderstood, and ourselves thereby become liable to criticism. Reviewing, like virtue, "is its own reward;" that is, the principal remuneration for the labor of research (although limited, we confess, in our own case) being the discipline acquired, and the satisfaction experienced in adding, perhaps, a few drops to the bucket. In our *notice* of "Guersant" in the March number of this JOURNAL for 1873, we stated that Dr. Sayre's treatment of fractured clavicle was unlike Dr. Moore's method; that Sayre's method did not put the clavicular fibres of the pectoralis major muscle on the stretch, and that Dr. Sayre had not given that explanation of the effect of his dressing, so far as we knew, until after Moore's speech was made in Albany, in 1870. In this, our only desire was to bring out facts, our comments being called out by the article in the *American Journal of Medical Sciences.* The particular method of Sayre's dressing, nor the length of time the eminent surgeon had availed himself of its benefits, did not concern us, nor did we express an opinion as to the relative merits of the two dressings. The surgeon already referred to answered our remarks in the April number of this JOURNAL, stating that we had done him "injustice," and referred us to his article published in the *American Practitioner* in July, 1871, explaining the effect of his dressing on the clavicular fibres. As Moore's paper was read before the State Society in February, 1870 (although the "Transactions" did not appear for more than a year), Sayre's article, according to his letter, did not appear until about seventeen months afterward. Hence our position, in regard to the priority of the discovery of the *principle*, is still tenable.

Now, as to the effect of the treatment: we shall not follow the eminent professor in his description, but refer the reader to his original article or his letter already mentioned. Since the clavicular fibres of the great pectoral muscle are inserted into the lower part of the lip of the bicipital groove, we cannot escape the conviction that, if the shoulder is forced "*upward*, *outward*, and *backward*," and if an assistant presses "the *elbow well forward* and *inward*, and retains it there," the effect will certainly *not* be to make *tense* the fibres in question. According to our best recollection, when witnessing the professor apply his dressing, the arm, when the dressing was completed, was left in a position not far from perpendicular. The drawing of the *shoulder* backward cannot stretch the clavicular fibres. Mr. Erichsen does not allude to either Sayre's or Moore's method.

After this digression, we come to notice the author's treatment of fractures in general. The starch-bandage is a favorite dressing, for reasons already known. Our best American authorities, as well as most practical surgeons, will be likely to discredit the statement that by its means patients have "frequently been cured without any shortening, with the preservation of the natural curve of the bone, and without confinement to bed after the first week." And "in compound fractures also of the leg, and even of the thigh," most satisfactory results have been obtained.

Fracture of the neck of the thigh-bone is said, in common with Sir A. Cooper, to be produced *within* the capsule from slight causes, and *without* the capsule from external violence. Hagedorn, who wrote a valuable treatise on fracture of the neck of the thigh-bone, considers falls with the force directed upon the neck of the thigh-bone, or great trochanter, as the most frequent cause of intra-capsular fracture, and is supported in the opinion by Samuel Cooper in his work.[1] Upon this point we shall not attempt to decide with positiveness. We are, however, inclined to think, from all the evidence we can gather, that in the oldest individuals, in whom the greatest amount of change in the structure and composition of the bone has taken place, trips are more liable to produce intra-capsular than extra-capsular fractures. But, in younger persons, violence applied to the trochanter or knee is more apt to cause fracture within the capsule. The converse also holds true, namely, blows upon the trochanter in the very old, and trips in those younger, but in whom the bones have become brittle, are most liable to cause extra-capsular fracture. We agree with the author in making an attempt to procure bony union if the shortening is not great, and other things being equal; and would also recommend extension in all cases if the patient's health will bear the confinement, as the fibrous union obtained is almost as good as bone, and avoids a considerable part of the shortening that would ensue otherwise.

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[1] Vol. ii., p. 437.

In speaking of the liability of the occurrence of fracture of the thigh in attempts to reduce old dislocations of the hip, the late Dr. Blackman, of Cincinnati, is included among those who have met with the accident, although that surgeon disclaimed, in a review[1] of the former edition of the work, ever having had such a case.

In the chapter on "Special Dislocations," *dislocation of the hip* is well considered, due notice having been taken of the investigations of Bigelow.

Of the methods mentioned of reduction of dislocated shoulder, we fail to see notice of that by manipulation.

Chapter XXIV. is given to the description and treatment of "Injuries of the Head." In considering intracranial abscess, it is stated (p. 458), "There are few surgeons who would have the hardihood to follow the example of Dupuytren, who plunged a bistoury into the substance of the brain, and thus luckily relieved the patient of an abscess in this situation." Dr. Noyes, of New York, saved a similar case by introducing a trocar and canula, and perhaps Prof. Hamilton's case would have terminated favorably had the trocar been used instead of the knife; as he struck the abscess, the wound closed upon the withdrawal of the bistoury. If the symptoms of abscess are well marked, we see but little objection to *plunging* into its supposed seat, as the patient is most certain to die if the pus is not discharged.

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[1] *American Journal of Medical Sciences*, January, 1870.

In respect to the disputed points in which *trephining* is at issue, Mr. Erichsen takes middle ground. In compound depressed fracture, with or without existing symptoms of compression, trephining is recommended, also in single fracture, if symptoms of compression supervene; or, if the depression is narrow and considerable, without symptoms of compression, the operation is considered proper.

In the chapter on "Injuries of the Spine," spinal concussion is treated at considerable length. No special symptoms are considered pathognomonic of *railroad* injury to the nervous system.

In the third division of the work, treating of "Surgical Diseases," the discussion of *pyœmia*, with its relation to phlebitis and thrombosis, is quite interesting. It is said to depend upon the following conditions, *each* of which may "prove the sole exciting cause of some special symptoms which, taken together, constitute the disease called pyæmia:

"1. An increase in the number of the colorless corpuscles, constituting the affection termed *leucocytosis*, which has been commonly viewed as a proof of the admixture of pus with the circulating fluid.

"2. The formation of *thrombi*, and the changes which take place in them, leading to *embolism* or *metastatic deposits.*

"3. An absorption of ichorous or putrid matter, and the commingling of this with the blood-stream, producing the condition called *ichorrhœmia* or *septicœmia.*"

These three propositions are discussed in turn. The consideration of the first seems to afford no elucidation of the question. While the existence of an abnormal number of white corpuscles in the blood of pyæmic patients is conceded, there is no proof of a causative relation existing between that condition and pyæmia. Mr. Erichsen thinks that pus may be absorbed directly into the blood, and that phlebitis (p. 761) "is highly dangerous, being often the forerunner and the exciting cause of pyæmia." On page 763, in describing "diffuse phlebitis," which is quite fatal, Arnott is quoted as having shown the limited extent of the inflammation. "Hence" (says Erichsen), "it is probable that death is owing either to the admixture of pus with the blood that circulates through the inflamed portion of the vein, or to such changes, induced in the blood by the inflamed surface over which it passes, as are incompatible with life."

On p. 160, vol. ii., describing "Osteo-Myelitis," Mr. Erichsen says: "In it death may ensue in two ways—either by the exhaustion consequent on the prolonged and profuse suppuration, or by pyæmia dependent on inflammation of the osseous vein, and consecutive blood-poisoning. There is a triple pathological sequence of osteo-myelitis, osteo-phlebitis, and pyæmia, which is of a marked character."

Unless pus be introduced into the blood in pellets and flakes, or in considerable quantity (which, according to Bristowe, may occasion embolism), there is no proof that harm results from its introduction. The effect of the introduction of a large quantity is, to induce coagulation of the blood.[1] Since, according to F. E. Schultze,[2] the size of the moderately full lung-capillaries measure 0.006–0.008 millimetres in diameter, and according to Rolett[3] the diameter of the disk of the red corpuscle is about the same size, it must be inferred that the pulmonary infarction in pyæmia depends upon other causes than the presence of pus; and that, aside from the depressing effects of the inflammation complicated with erysipelas of the cellular tissue, the effects of phlebitis are purely mechanical. "The formation of a clot in an inflamed vein," says Ashhurst,[4] "is obviously designed by Nature to prevent the entrance of morbid material into the general circulation, and hence, when the clot is well formed, and in a healthy person, the disease is local, and unattended with any particular danger."

The discussion of the second proposition demonstrates the fact that thrombus is caused by alteration in the blood-current and preëxisting changes in the blood itself; the only effect of thrombus is: 1. In being divided, the detached portion being carried into the general circulation, causing embolism; and, 2. In the breaking down of its substance, causing septicæmia. The embolism, with the resulting gangrene and possibly "metastatic abscess," in connection with thrombus, is not identical or synonymous with pyæmia, although frequently coexisting with it; therefore, the only point of interest connected with this proposition is the relation of disorganization of the clot to pyæmia.

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[1] *Vide* Ashhurst's "Principles and Practice of Surgery," pp. 405, 406.

[2] Stricker's "Histology," American edition, p. 446.

[3] Ibid., p. 268.

[4] *Op. cit.*, p. 516.

It is highly probable that the abscesses are, in many cases, induced by the extravasation which is known to be favored by the pyæmic state—as, ordinarily, symptoms of pyæmia precede those of infarction and the onset of the abscess; besides, the *post-mortem* examination usually shows that abscesses and clots bear a later origin than the pyæmic symptoms. Aitken[1] says, "Secondary changes—*not so much by the softened mass*" (italics ours) "as by the detachment of larger pieces . . .—are known to occur," etc. Lidell,[2] being unable to account for the existence of secondary abscesses in the lungs as a result of thrombosis, considers them to be the result of "some morbid influence of a peculiar character which the pyæmic poison exerts upon the pulmonary tissue." His cases show that in scarcely any instance can pyæmia be ascribed to phlebitis and thrombosis; but thrombosis, commencing in the smaller veins and extending into the larger (inducing phlebitis), frequently attends the later stages of pyæmia, being caused by blood-poison; there is not, however, any direct causative relation necessarily existing between pyæmia and thrombosis. The formation of a clot is a very dangerous complication of any affection; but that it may exist in considerable quantity, and yet recovery take place without the occurrence of pyæmia, is abundantly proved in practice.

The third proposition, that of *septicæmia* being the essential condition in pyæmia, is in accordance with the latest views—and, no doubt, correct. There is but little doubt that gonorrhœal rheumatism and urethral fever are types of pyæmia, according to the view of Lexier, T. K. Chambers, Ashhurst, and others. Inflammation of the mucous membranes is quite liable to result in that condition.

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[1] "Science and Art of Medicine," third American edition, vol. ii., p. 413.

[2] *American Journal of the Medical Sciences*, October, 1872.

We hardly know how to understand the author in his description of "Venereal Diseases" (Chapter XXXVI.); we had given him credit for advancing a step in the acceptance of the dualistic theory, until, on p. 691, vol. i., speaking of the treatment of soft chancre, we noticed the very same expression which occurs in the previous edition, and which the American editor of that edition strove to correct. It is this:

". . . Contrary to the opinion of many surgeons of the present day, I consider it much safer to put the patient upon a mild course of the iodide of mercury."

Aside from the confused impression which this passage furnishes, coming as it does upon the heels of a recognition of the difference between syphilis and the simple, non-indurated chancre, we cannot but regard the advice as highly pernicious, and believe it cannot be too strongly condemned.

"Aneurism" (Chapters XLIV., XLV., vol. ii.) is very fully and completely handled, the description occupying one hundred and twenty-six pages. The different methods of treatment are sufficiently discussed, and proper deductions drawn for the benefit of the practical surgeon. A few inaccuracies in statistics, which were found in the previous edition and pointed out by Dr. Blackman, in the article already referred to, are retained in the present edition.

In the table of ligature of the subclavian artery for innominate aneurism, four cases are reported, all fatal, omitting the fatal one of Blackman. Nearly all the cases of ligature of the carotid only, for the same affection, have terminated unfavorably. Eleven cases of ligature of both the carotid and subclavian are reported with little better success, one case having been cured, and in two or three benefit was derived and life prolonged. The fatal case of Cheever, of Boston, is omitted in the table.

In the table of ligature of both carotids, the name of Velpeau is retained with questionable propriety; F. H. Hamilton for T. H. Hamilton; Reynolds for J. K. Rogers, and Longmore for Williams. Twenty-seven cases are given, with twenty recoveries and seven deaths. The successful case of Foote may also be added. Twenty-one cases of ligature of the carotid for intra-orbital aneurism are reported, with fifteen recoveries and three deaths. Noyes has reported in this JOURNAL[1] twenty-nine cases, of which twenty-five recovered and only one died.

Thirteen cases of brachio-cephalic ligature are given, including the successful case of Smyth, who also tied the carotid and vertebral. The operation said to have been performed by Pirogoff is omitted. Two cases by Bujalski,[2] one by Hutin, one treated by acupressure by Porter,[3] may properly be added to the list.

Of thirty-nine cases of ligature of the common iliac, reported by the author, twenty-nine died and ten recovered. Ashhurst reports forty-five cases, omitting Syme's. Adding to this list the fatal[4] case of Gouley, performed October, 1871, and witnessed by the writer, forty-seven are upon record with at least twelve recoveries.

The author thinks the conception and accomplishment of the determination to tie the aorta a great achievement, it being first performed by Sir A. Cooper. In view of the seven fatal cases, might not this operation as wisely be "banished from surgical practice" as ligature of the subclavian within the scaleni or ligation of the bracho-cephalic? The author, notwithstanding his eulogy, recommends compression.

The chapters on "Diseases of the Bone," "Diseases of Joints," and "Excision of Joints," though condensed, are full of interest as in the preceding edition. Sayre's extensor apparatus in connection with the subject of hip-disease is noticed, but we observe no mention of it in connection with diseases of the knee. "White swelling" is said to be an inflammation of a "truly scrofulous" character.

The description of "Diseases of the Ear" is limited to two pages.

The chapter on "Ophthalmic Surgery" (LVI.), by Mr. Streatfield, is very properly devoted mostly to the discussion of those affections most likely to come within the notice of the general surgeon and physician.

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[1] March, 1869, p. 667.

[2] Gurlt must have included these in his report.

[3] Ashhurst, *op. cit.*, p. 548.

[4] This patient died on the nineteenth day, of pyæmia, consequent (?) upon sloughing of the sac. The vessels above and below the point of ligature were completely obliterated.

There is much matter in the work under review that we cannot notice in this article. We may say, however, it is Erichsen's "Surgery" still; it comes out in a new dress and is more valuable than any previous edition, although no notice is taken of the annotations of the American editor of the former edition. In pointing out some flaws which we have taken occasion to notice, we have no idea of detracting from the general character of the work, which we may safely say is one of the best in the language for the general practitioner; the want of full references to quoted authorities may be an annoyance to the more scientific surgeon. In comparison with other late works issued nearly simultaneously in this country, it may be fair to say that it is less verbose than Gross, and somewhat fuller (though in some respects less modern) than either Ashhurst or Hamilton. It is most noted for the clearness and accuracy of the rules given for operative procedures.

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Transactions of the Third Annual Session of the Medical Society of Virginia, 1872, pp. 178.

Translations.

Traumatic Acquired Club-Foot.—Dr. Max Bartels (*Archiv für Klin. Chirurg.*, xv., 1872) has given the above name to those abnormal positions of the foot which have followed lesions affecting the malleoli, the tarsus, or both combined. The mildest form, which usually follows fracture of the internal malleolus, is characterized principally by an abnormal elevation of the inner border of the foot; more marked forms, reduction of which is accomplished with great difficulty, are observed, when the above-mentioned fracture is complicated with a partial or total separation of the upper surface of the astragalus; the most marked cases simulate the congenital *pes varus* very closely; the sole of the foot is strongly arched, and looks inward; the inner border of the foot is elevated, both borders of the foot are concave inward. The differential feature between the traumatic and congenital variety lies in the more arched condition of the inner border of the foot, which, in the former, commences at the internal malleolus. The tendo achilles and calcaneus preserve their normal relation, excepting the occasional occurrence of new osseous deposits around the former, and, in the latter, of cicatrices and induration of the skin. A clawed condition of the toes toward the plantar surface is also often found, in aggravated cases of luxation or sub-luxation of the phalango-metatarsal joints.

Treatment consists, either in the reposition of a fracture, in the extraction of interposed osseous fragments, and in resection, or orthopedic exercises, combined with plaster-of-Paris bandages and club-foot splints.

The consideration of five cases forms the subject of the author's paper: The first, a fracture of the internal malleolus and the upper surface of the astragalus, in which reposition was accomplished by strong plantar flexion outward, alternating with dorsal flexion inward, and pressure on the fibula and the astragalous fragment; the second case, observed by Astley Cooper, of a recent traumatic luxation of the tarso-metatarsal joint, very closely resembled a congenital *pes varus*, as did also the third case, illustrated and described by Gurlt, of a consolidated fracture with deformity of the foot. Another case had occurred after necrosis of the lower end of the tibia, and was cured by resection of the lower end of the fibula. A severe case of *pes varus*, with aggravated deformity of the toes after a fracture of the tibia, fibula, and the upper posterior border of the astragalus (which latter was extracted primarily), yielded to passive motion and a club-foot splint.

On the Relation of Noma to Gangræna Oris.—Schmid (*Bayr. Intell.-Blatt.*, 1872) takes the view (also held by the majority of late authors) that noma is not a distinct disease, to be differentiated from other gangrenous affections, but that the starting-point is the mucous membrane of the cheeks, from which the process first spreads to the mucous membrane of the mouth, and then to the gums. In the case observed by him, which is also of interest in that the disease affected both cheeks, gangrenous destruction of the gums had already occurred four days before the mucous membrane of the cheeks became affected. Notwithstanding energetic cauterization with carbolic acid, the affection continued to spread, and death followed in six days. Noma is therefore to be considered only as one of the phenomena of gangræna oris, and, not differing from it anatomically, no clinical distinction should be made.—*Centralblatt f. d. Med. Wissensch.*, 1872.

Reports on the Progress of Medicine.

SELECTIONS FROM RECENT OPHTHALMIC LITERATURE.

By HENRY D. NOYES, M. D., New York.

1.—*Du Zona Ophthalmique et des Lésions Oculaires qui s'y rattachent.* Par le Dr. Albert Hybord. [Paris—Adrien Delahaye, 1872, pp. 161.]

The above *brochure* gives a complete account of what is yet known of herpes zoster ophthalmicus. It is founded upon a review of ninety-eight cases, of which six are contributed by the author. The clinical features of the disease are so well known that they need not be here repeated; but the following statements, drawn from the large number of cases, are worth reading. The eruption takes place a few hours or days or even three months after the outbreak of neuralgia; in a few cases it occurs without any precedent neuralgia. In thirty-two cases, that is, one-third of the whole, the eye was not affected. In the remaining two-thirds, the ocular lesion was in the eyelids, conjunctiva, cornea, iris, or muscles, or lachrymal gland. The corneal diseases were vesicular eruptions, ulceration which might go on to perforation and suppuration, or simple interstitial keratitis. The pupil in a few cases was dilated. The iris and cornea were commonly inflamed together, and their inflammation presented itself in one-half the cases. Iritis may occur without corneal inflammation, while severe keratitis is accompanied by iritis.

In fifty-three cases, the herpetic eruption appeared on the nose, and in thirty-five of these the iris and cornea were inflamed. In only seven cases did kerato-iritis occur when the eruption was confined to the forehead. Mr. Hutchinson's remark about the association of kerato-iritis with the irritation of the nasal branches of the ophthalmic nerve is substantially verified. The reason is found in the fact that the nasal branch of the ophthalmic nerve supplies the filaments which enter into the ciliary nerves.

The most interesting part of the paper is the discussion of pathological anatomy. The disease we are considering belongs to the general category of herpes zoster, and several interesting autopsies are quoted—one case by Baerensprung was an infant a year old who died of pulmonary tuberculosis, and during forty days before death had herpes of the sixth, seventh, and eighth intercostal spaces of the left side. The cord was healthy; the sixth, seventh, and eighth intercostal nerves healthy up to the intervertebral foramina, where they became thickened and injected; the ganglia of the roots were enlarged, and the surrounding connective tissue presented inflammatory redness. By the microscope, unmistakable traces of inflammation were found in the ganglia and the roots of the nerves up to their place of junction. Substantially the same lesions have been found by Charcot in a case of zona of the neck. Weidner gives an examination of a woman who died of pneumonia while having an attack of herpes on the left shoulder and arm. On the sensitive root of the first thoracic nerve was found a small tumor of the neurilemma, which penetrated and separated the fibres of the nerve. It consisted of fusiform cells, and nuclei and corpuscles impregnated with phosphate and carbonate of lime. Weidner also gives another autopsy which conducts to our present subject: an old man, who had had zona ophthalmica, died five years after of pneumonia; at the dissection, the fifth nerve was found to be shrunken at its emergence from the pons Varolii, and the pia mater hyperæmic; and again there were contraction of the nerve and hyperæmia at its entrance into the ganglion of

Gasser. In the ganglion the filaments of the nerve were dissevered from one another, and the interstices filled by a red and thickish liquid. The ganglion-cells were of unequal size, and contained abundance of yellowish-brown pigment: the connective tissue was replete with nuclei.

The most detailed autopsy in ophthalmic zoster is given by Wyss. The chief lesion was in the ganglion of Gasser, which was enlarged, softened, and injected. On its inner border was a red spot, one millimetre in diameter, looking like extravasation of blood, and the ophthalmic nerve was surrounded by bloody extravasation up to its entrance into the orbit. It was both thicker and wider than the opposite nerve, and of a soft, gelatinous consistence. The second and third branches of the fifth nerve were normal. By the microscope, the tissue of the nerve before entering the ganglion was found filled with extravasated blood, the capillaries distended and multiplied. Only the internal part of the ganglion which gives origin to the ophthalmic nerve was altered in structure. Here were extravasations and enlarged capillaries. At many points the ganglion-cells were disintegrating, some were entirely destroyed, while pus-cells were present in abundance; changes of a similar kind were traced down the nerve-trunk. The fibrous tissue was the structure chiefly damaged, but many nerve-fibres also exhibited lesions in the coagulation of their myeline, and conversion of the axis-cylinder into fat and granular matter. Of the peripheral lesions in the case may be mentioned abscesses in the ocular muscles, in the upper lid, in the subconjunctival connective tissue, and phlebitis of the ophthalmic vein—purulent infiltration of the cornea and iris, and extravasation of blood in the choroid and retina. The ciliary nerves were abundantly surrounded with pus-cells and extravasations.

The above facts give the explanation of herpes zoster, whether it affect the ophthalmic nerve or any branch coming from the cord. But it must also be stated that the eruption occurs from lesions not only of the ganglion on the sensitive root, but from inflammation of the peripheral part of a nerve as in traumatic cases, and from changes both in the gray substance of the posterior cornua of the cord and in its posterior columns.

In reasoning upon the facts discovered, Dr. Hybord distinguishes between the lesions now considered and those which result from paralysis of the fifth nerve. In the present case, the nerve is in active irritation when mischievous effects appear at its peripheral distribution. The impaired nutrition which sometimes attacks the cornea after paralysis of the ophthalmic branch of the fifth is evidently a very different condition; it is a suspension of function. In the latter case Dr. Hybord attempts to show that the eye suffers only when there are both anæsthesia and destruction of certain trophic filaments which come from the inner part of the ganglion Gasser. In the case of herpes zoster ophthalmicus the same fibres, both sensitive and trophic, are the seat of an active irritation.

2.—*A Report on the Forms of Eye-Disease which occur in Connection with Rheumatism and Gout.* By JONATHAN HUTCHINSON. [Ophthalmic Hospital Reports, vol. vii., pp. 287.]

The author deems it wise to call attention to rheumatism and gout as causes of iritis and scleritis, because this etiology is important to be recognized in treatment. He thinks the prevalent practice of the present time has disregarded this connection in an unfair degree. He fortifies his position by quotations from standard authors, and recounts seventeen cases which have come under his own observation. He takes pains to note the instances in which the patient has had gonnorrhœa as well as rheumatism or gout, prior to the eye-inflammation. Mr. Hutchinson does not assert his belief in a causal connection between gonorrhœa and rheumatism, or *vice versa*, but many of the authors do whom he quotes. This point is not quite in order to the discussion, but it deserves attention, that the present uncertain belief of the profession about it may be made more decided either for or against the theory. As to the influence of rheumatism and gout in causing scleritis and iritis, there can be no doubt; and that the form of inflammation is often both severe and obstinate is true; and this is the fact even when strictly anti-rheumatic or anti-gouty remedies are resorted to.

Perhaps the purpose of Mr. Hutchinson's report can be best enforced by relating a case in which the necessity of attending to the rheumatic diathesis was signally illustrated.

Mr. S., a lawyer, aged about forty, of plethoric habit, and very active mentally and physically, had abused himself by many excesses, had had syphilis and gonorrhœa, had had several attacks of iritis before I saw him, and they had been treated by mercurials and iodide of potassium as well as by sulphate of atropia. In some of the attacks he had been sick two months. He consulted me in one attack of iritis, and expressed an extreme aversion to submit to the former constitutional treatment. I judged, from the ruddy hue of his face and his full habit, that rheumatism might be to a great degree responsible for his iritis; especially because he complained of wandering muscular pains, and stated that his eye-trouble was apt to follow excesses in eating and drinking. He had iritis serosa. I directed the sulphate of atropia, grs. ij ad ℥j, every three hours, in the eye; and a drachm of Rochelle salts three times daily, with free use of diluent drinks. In forty-eight hours the symptoms ameliorated, and in a week the eye was well.

In less than a year another attack occurred. For this he himself tried, for a few days, the sal Rochelle and atropia, but with little benefit. I substituted liquor potassæ for the salt, and the good effect appeared promptly. The iritis was gone in a week, and by the atropia the pupil was fully dilated. The kidneys were in both instances excited to free action. In this case it was natural to suppose that syphilis might be the cause of the attacks, but the frequency of their occurrence, and the patient's appearance, impressed me with the idea that they were due to rheumatism, and this belief was fully confirmed by the success of the treatment.

3.—*Contribution to the Pathology of Keratitis.* By Dr. S. Talma. [Archiv für Oph., Bd. xviii., Abth. 11, S. 1–9.]

The purpose of the author's experiments was to ascertain whether pus-cells are developed from the corneal corpuscles or are exclusively the white blood-corpuscles which have passed out of the capillaries. He excited traumatic inflammation in the cornea of frogs and white mice, rabbits and Guinea-pigs, by carefully touching it with nitrate of silver. After periods varying from half an hour to several days, the eyes were excised, and the cornea examined under the microscope. In all cases, the first perceptible changes in tissue began in the circumference of the cornea, not in the vicinity of the centre where the caustic was applied. The test-substance relied upon to distinguish between corneal corpuscles and pus-cells was a strong solution of sugar. By it, the former are not affected, while the latter shrink to a nearly spherical form, and refract the light very strongly, and thus become conspicuous in the transparent tissue. The strength of the solution varies from 7½ to 10 per cent.

The result of many experiments, made at all stages of the inflammatory action, was to establish the fact that the corneal corpuscles have no part in the production of pus-cells; even when the cornea was deeply infiltrated, the corneal cells showed no signs of breaking up with or producing pus-cells. The conclusion is, that the pus was originated by emigration of the white blood-corpuscles from the vessels—that, in other words, they are "wandering cells." To substantiate this view, another experiment was made, by which, in two hours after irritation of the parts, the vessels in the immediate neighborhood of the cornea, in the eye of the porpoise, and white mice, and rabbits, were examined, and found to be crowded full of white blood-corpuscles, some of which had passed out of the walls of the vessels.

4.—*Epithelioma Perlé ou Margaritoïde de l'Iris.* Par Prof. F. Monoyer. [Paris, 1872, pp. 22.]

The case described is one of tumors of the iris which appeared some time after the eye had been wounded by a piece of wire. Vision continued at two-thirds. One tumor was about the size of a kernel of wheat, and at the lower and outer part of the iris; the other, diametrically opposite, and about as big as a hemp-seed. The color was peculiar, like mother-of-pearl, and the anatomical structure exhibits why it should have this reflex, because, like mother-of-pearl, it was made up of lamellæ.

The diagnosis was that the tumor was a cyst, and the operation for its removal was begun under this belief. Serious difficulties made its removal troublesome, and the eye was roughly treated. The effects of chloroform were unpleasant. The issue of the operation was panophthalmitis.

The tumor proved to be solid throughout, and to have no outer envelop. Its histological structure was epithelial, and the large cells resembled the epidermoid layer of the skin. They were without nuclei, and overlapped each other like layers of an onion; mingled with them were crystals of cholesterine. The attempt to explain why the tumor should grow is not satisfactory, but the practical fact that it proved to be solid is memorable, and that its shiny, iridescent surface betokened its solid structure is valuable for diagnosis.

Prof. Monoyer expresses his judgment in favor of a flap-wound in preference to a linear wound by which to remove such tumors, because it can be most easily enlarged if needful. He also incidentally states his preference for a wound of the cornea which is midway in character between a flap and the peripheral linear of Graefe, for extraction of cataract.

A tumor something like the above was reported by Prof. Rothmund, *Klin. Monatsbl.*, October, November, December, 1871.

5.—*Muscular Asthenopia and Myopia.* By J. Mannhardt. [Archiv für Ophth., Bd. xvii., Abth. 11, S. 69–97.]

The gist of this paper is found in an attempt to give a more correct means of measuring muscular insufficiency than we possess. Before coming to this, some observations are made as to the general subject of myopia and hypermetropia, and their relations to muscular troubles. The author is an Italian, and asserts that, while about 80 per cent. of his countrymen are unable to read, in the remaining 20 per cent. myopia is extremely frequent, and it occurs only among this class. He says that he operates for strabismus divergens twenty times more frequently than for strabismus convergens.

The point which the author emphasizes is that, in determining muscular asthenopia, the distance between the centres of rotation of the eyes must be taken into account. This is sufficiently obvious, and as is seen by an illustration that, if the ocular centres are 56 millimetres apart, an angle of convergence of 21½° will make the optic arcs cross in the median line at 7 centimetres from the base line, while, if the intraocular distance is 72 millimetres, the place of crossing will be 9 centimetres distant with the same angle of convergence. Hence, in the latter case, a convergence for the same distance demands a greater angle and muscular effort.

On this point are some observations as to the formation of the skull and types of race in originating these differences. The author calls the power of diverging the visual lines beyond a state of parallelism the facultative divergence. He gets it by means of prisms with the base inward, while the person regards a distant object. He takes 8 centimetres as the average distance from the base-line to which the normal power of convergence should attain. He takes the average amount of facultative divergence at 2½° for each eye, and the total converging power (C), which includes the facultative divergence (f. d.), at 24° for each eye.

The visual intraocular distance he takes at 64 millimetres. The greater this width, the greater does he find the facultative divergence, and upon simple anatomical grounds. In a given case the author's method is to measure the distance from the centre of one pupil to the centre of the other (how, he does not say); to take half this distance as a base-line; to erect upon one extremity a perpendicular of 8 centimetres; and then, by a protractor, find the angle of inclination of the eye to effect this convergence; next, by prisms, to find the degree of facultative divergence. For instance: if the base-line be 32 millimetres, the angle of convergence will be 21½°. If facultative divergence be 2½°, there will be no symptom of asthenopia—in this case, the sum total of convergence being 24°. But, if with the same base-line the facultative divergence be greater, and, added to the other angle, reach 28° or more, then he expects to find asthenopia.

The assumption in the above reasoning is, that the average converging power is 24°, and that intraocular separation is the essential element in musculiar asthenopia. We are not prepared to accept the first statement as a general principle. It is emphatically not true of many persons; some of whom have far more muscular power, and some rather less; while both show no signs of asthenopia. As to the second proposition, while it deserves weight, it fails utterly to account for many cases of the trouble as we see them in this country. We find the disease without any refractive error, and oftenest in women in whom the intraocular distance is small. In truth, this paper professes to deal with muscular asthenopia only in its relations to myopia, and a very large contingent of cases with which American practitioners are familiar is quite left out.

6.—*On the Diagnosis of Muscular Insufficiency.* By Dr. L. Kugel. [Archiv f. Ophth., Bd. xviii., Abth. 11, S. 163–200.]

The writer has special qualifications for the work which he undertakes, in being himself afflicted by the malady which he describes. He contributes highly-valuable suggestions on the question of diagnosis, and shows a more penetrating insight into the matter than is evinced by any paper written since Graefe's contributions. A desideratum which he does not satisfy is, to give precise indications for the use of prisms, what determines their degree, and how they are to be employed. But we may congratulate ourselves on what Dr. Kugel has given, and hope he has more in reserve.

Dr. Kugel places the highest value upon Graefe's test for the near, by causing vertical diplopia; and in this we agree with him, in opposition to Mannhardt. The facts of his own case are a complete refutation of Mannhardt's assumption that all persons possess an arc of movement of the eye of 24°, and that insufficiency consists only in an undue distribution of the total, between divergence and convergence. Dr. Kugel has for six inches insufficiency of 24°, for ten inches of 18°, and for six feet equilibrium; in which case Dr. Mannhardt would pronounce him not a subject of insufficiency. He has in one eye a mixture of regular and irregular astigmatism, and vision equals one-tenth. He gives the practical hint that, for cases like his own, of monocular amblyopia, a large dot be used, or, for considerable distances, the flame of a candle, in testing the muscles. The symptoms, to which he specially calls attention, are the following:

1. That by putting a colored glass before one eye, and especially before the better one, he sees crossed double images.

2. That, because of the increase of the insufficiency of the interni, when the eyes are turned upward, a marked diminution of the acuteness of vision will be noticed in those patients when they attempt to read with the eyes turned upward. For himself the difference is so great that, while with downcast eyes he reads No. 1 without glasses at ten inches, with visual lines turned up he reads only Snellen No. 7. The converse is true that, when the look is strongly directed downward, visual acuity increases.

Turning the eyes sidewise has the effect to diminish muscular insufficiency, and, in the case of Dr. Kugel, from 18° to 14°. This was also noticed by Graefe.

3. An experiment to which Dr. Kugel attaches importance is, the effect produced by rotating a prism in front of one eye. If there be no muscular trouble, the appearance will be that the image seen through the prism will move in a circle around the true image as a centre. If insufficiency exist, the false image will describe a circle, leaving the true image either on its periphery, or outside of it, or inside of it, but eccentric.

4. To detect irregularities in the muscle, he employs the following test with a vertical line: He places obliquely across its centre a card about eight inches wide and long, with its edge on the paper so that one eye shall see only the upper half of the line, and the other eye only the lower half of the line. The two halves of the line fail to appear continuous, but separate into parts laterally displaced—this discovers lateral insufficiency. He discovers errors in the muscles which move the eyes up and down, by putting a similar piece of card edgewise and vertically across the middle of a horizontal line—the right half being visible only to the right eye, and the left half only to the left eye. To Dr. Kugel the line breaks into two halves, displaced laterally and vertically, so that one appears above the other, and the two not parallel. A prism correcting the insufficiency of the interior restores the correct lateral position, while a prism of 2° base vertical brings down the halves to a common level. This discovers the vertical deviation of the eye and its degree. The experiment may be carried further by drawing a line perpendicular to each half; then, in case the muscles rotating the globes, if at fault, will make the separated crosses to stand awry—either diverging or converging at the top. These and all the tests should be made with the eyes in the usual reading position, slightly turned downward—Listing's primary position—and, with them, elevated and depressed; when elevated, divergence is promoted, and, when depressed, convergence is favored.

The author states that he is presbyopic, and uses, for reading, +24. He naturally raises the inquiry as to the influence of glasses in insufficiency. He finds that with his glasses the muscular defect is increased at 10″ by 4°, and advises that the state of the muscles should be determined with the half of the glasses proper to the refraction. A fact not mentioned by the author, and corroborating his general statement, is, that in myopes, who have insufficiency, concave glasses will abate or remove the apparent muscular defect, the seeing-distance not being changed.

7.—*Contributions to a Better Knowledge of the Deeper Lymphatic Vessels of the Eye.*—By Dr. Julius Michel. [Graefe's Archives, B. xviii., Abth. I., S. 127–154.]

Contribution to the Histology of the Lamina Cribrosa Scleræ. By Dr. Wolfring. [Graefe's Archives, B. xvii., Abth. 11, S. 10–24.]

Remarks on the Blood-Vessels of the Optic Nerve and Retina, and their Relations.—By Prof. TH. LEBER. [Graefe's Archives, B. xviii., Abth. 11, S. 25–37.]

The researches of Schwalbe and Schmidt have done so much to establish an intimate connection between the optic papilla and the brain, both in anatomy and pathology, that the subject cannot be dropped until it has been completely exhausted. In fact, it is imperative that we should possess the most absolute and complete knowledge of the whole matter. Without it our inferences from the phenomena of the optic disk must be uncertain and vague. On the one hand, we should fail to properly appreciate all that occurs in intraocular pathology, and still more egregiously must we miss the mark when we begin to reason from these data to intracranial lesions. The papers above quoted supply us with important facts. But, with the most exact knowledge we can have, can any critical and logical observer with the ophthalmoscope be willing to use the word cerebroscopy when he is studying only the optic papilla?

The papers of Wolfring and Leber relate more to the blood-vessels than to the lymph-vessels, and they make more complete the classical studies of Leber on the same subject in 1864. The facts made prominent are as follows:

That the lamina cribrosa is neither a region of the sclera bored with many holes for the passage of optic nerve-fibres, nor a single hole partially filled up by a net-work of connective tissue thrown across it from the scleral margins, through which the fibrillæ of the nerve are transmitted. It is made up of—1. Fibres of connective tissue derived from the optic nerve-fibres, which at this point part with their neurilemma; and 2. Of a plexus of fine vessels which interpenetrate the bundles of nerve-fibres. The origin of these vessels is an important point in the paper. About the connective tissue it must be added that a large number of cells are found in the lamina, which Wolfring calls lymphoid cells, but which Leber inclines to think are only connective-tissue corpuscles: they are abundant in new-born children.

The optic nerve is invested in the orbit by two fibrous sheaths, one enclosing the other, and between them is a space which Schwalbe calls a lymph-space. The outer sheath at the eye fuses with the sclera; the inner sheath passes through the foramen opticum, and attaches itself to the sclera at the innermost lip of the opening. We will first consider the blood-vessels belonging to the nerve. At the lamina cribrosa a large number of capillary vessels interlace and form a plexus. These are furnished from several sources: 1. From a circlet of vessels which surround the optic nerve at its entrance into the eye, and come from the posterior ciliary arteries. 2. Some come from the arteria centralis retinæ. 3. Fine vessels come down from the pia mater and brain-substance along with the optic nerve-fibres and contribute something to the plexus. 4. On the inner sheath of the nerve, vessels ramify, which penetrate the lamina cribrosa. In reality the blood-supply is from three sources: by very fine vessels direct from the cavity of the cranium—these are the fewest; by branchlets from the arteria centralis retinæ, which penetrate the nerve about one-half an inch behind the eye; by twigs from the circlet derived from the posterior ciliary arteries, and these the most important. This circlet around the nerve was described by Zinn, as Leber tells us, but we well remember the stress laid upon it by Prof. Ed. Jaeger, who in reality rediscovered it fifteen years ago. It establishes an anastomosis between a limited region of the choroid and the papilla and the inner sheath of the nerve, and remotely with the brain. This circlet also supplies twigs to the outer sheath, and in reality is the great fountain of nutrition to the optic papilla. A finely-executed engraving shows these relations perfectly.

Leber very correctly draws some inferences from the above facts. One is, to abate some of the exaggerated stress which Galezowski and others have laid upon the vascularity of the papilla, as being a direct prolongation of the cerebral circulation. Behind the place of entrance of the arteria centralis retinæ, the optic receives vessels from its sheath and among its fibres and small vessels, all of which come from the brain; but the ocular end of the nerve is far more richly supplied from the additional sources mentioned.

While the blood-supply of the papilla is manifold, this does not help the circulation of the retina. The latter must depend on the arteria centralis, and, if this be plugged by embolus, the retinal nutrition is necessarily much impoverished.

This vessel is a terminal artery, as Cohnheim calls it in his paper on embolic process, and for this reason, if it be obstructed, infarctus ensues. This takes place for two reasons: 1. The withdrawal of the circulating fluid has a damaging effect on the walls of the vessels; and 2. The venous blood regurgitates through the capillaries, and, because of the softened state of the walls of the arteries, it bursts them and causes infarctus. This may be seen in retinitis apoplectica.

Besides the above studies of the blood-vessels, the lymphatics are to be considered. All that was claimed by Schwalbe is not confirmed. It is admitted that the intervaginal space of the optic sheath communicates with the cavity of the arachnoid, and fluid may be forced through from the cranium so as to pass the optic foramen along the intervaginal space to the eyeball; but the fluid did not find its way beneath the inner sheath, nor among the fasciculi of the optic fibres, nor into the lamina cribrosa.

The only way in which, without great violence, the fluid could be pushed into the lamina cribrosa, was, by putting the point of the canula just underneath the inner sheath of the nerve. To put it simply into the intervaginal space, or deep into the substance of the nerve, was quite ineffectual. It appears that the lymphatics course about the outside of the bundles of nerve-fibres, while the blood-vessels enter into the inside of these fasciculi. The lymphatics make a pretty close net-work just beneath the inner sheath, from which some trunks pass out through the united sheaths into the orbit; but the chief outlet is into the arachnoidal space. The substance of Dr. Michel's experiments is, that the intervaginal lymph-space communicates by apertures in the outer sheath with the extravaginal lymph-space, and by similar apertures in the sclera with the supra-choroidal lymph-space. The last, by means of lymphatic passages about the venæ vorticosæ, communicates with the capsule of Tenon. By these several intercommunications fluid may under some circumstances find its way from the arachnoid cavity so far forward as to make a sub-conjunctival œdema; but this is not to be considered a common event in pathology.

Another point is that, under severe pressure, an injection may be forced from the intervaginal space into lymphatic vessels, which exist in a narrow space in the sclera around the optic entrance. When distended they make a small path closely resembling the forms sometimes assumed by the choroidal atrophy in myopia, the so-called sclerotic choroiditis posterior, a noteworthy fact in Michel's injections.

8.—*Upon Hereditary and Congenital Disease of the Optic Nerve.* By Dr. Theodor Leber. [Archiv f. Ophth., vol. xvii., part xi., p. 249.]

The foundation of this article is a careful account of four families, numbering nine patients, whom Dr. Leber has examined and treated for optic-nerve disease, which has had an unmistakable hereditary character. There is a general similarity in the affection and the pathological character of the nature of the disease, which Dr. Leber pronounces to be retro-bulbar neuritis. This diagnosis is not based upon autopsy of any of the cases, but upon the chemical resemblance of the cases to those which are thus recognized. Before relating the account of his cases, reference is made to similar facts found in the older literature, showing that such observations have been made before. It is, however, impossible to discriminate, in the cases recorded in pre-ophthalmoscopic times, retinitis pigmentosa from optic neuritis. Both in clinical features, in treatment, and in prognosis, the two classes of diseases materially differ.[1]

Besides the instances which Dr. Leber has carefully noted, there are nine more of which he has knowledge, and from the total of eighteen he draws certain deductions. He regards the affection as inflammation of the stem of the optic nerve, with which retinitis is sometimes associated, and which terminates in partial and rarely in total atrophy of the nerve. Both eyes are commonly affected either at once or in succession, and the first symptom is central scotoma, which is apt to continue to be characteristic. The lesion appears suddenly as a cloud before the sight, and sometimes the scotoma reaches out from the centre to some part of the periphery. The development of the full extent of the mischief may be rapid or slow.

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[1] A case quoted by Leber from Monteath's translation of Weller was seen by him only in condensed form, as contained in Laurence "On the Eye." I find the autopsy to be interesting, both as regards the optic veins and the state of the cerebral arteries. The conjecture respecting the effect of pressure of the atheromatous carotids on the optic nerves has occurred to my own mind in another case, and is worth remembrance. I give Dr. Monteath's note in full [Weller "On the Eye," vol. ii., page 79, note]:

"In 1817 I was requested by my friend Dr. Brown, an eminent physician of this city, to inspect the head of a lady who had been affected with amaurosis for many years. The state of the optic nerves was very peculiar, and, as her sister and daughter were affected with the same disease, I have thought the leading circumstances of their cases worthy of being inserted here. The following statement has been obligingly sent me by Dr. Brown:

"'Mrs. ——, aged eighty-three, had been completely blind from amaurosis for thirty years, before her decease in 1817. She had also been subject to irregular gout, which assumed a variety of forms, and, some months before her death, she was attacked with palsy of one side.

"'On opening the head, aqueous effusion was found below the tunica arachnoidea and in both ventricles. One part of the cerebrum was observed to be of a pulpy texture; but these appearances were most probably connected with the recent paralytic attack, and not at all with the amaurotic.

"'All the nerves, with the exception of the optic, had the usual appearance. On examining the membranous sheaths of these nerves, it was ascertained that their medullary matter had been completely removed, and this change had taken place even nearer to the brain than where the nerves cross each other.

"'The arteries of the brain were in most parts altered in their structure; their coats were speckled with white spots, and their texture was more rigid and firm than natural. Both the carotids, where these vessels are in contact with the optic nerves at the foramen opticum, were found to be remarkably dilated, suggesting the idea that the absorption of these nerves was connected with the enlarged state of the arteries.

"'The absorption of the optic nerves nearer the brain, however, could not be accounted for on this notion, so that it is not easy to conjecture whether the enlarged state of the vessel was the cause or the effect of the absorption of the optic nerve.

"'A similar tendency to enlargement of the arteries was noticed where the cerebral arteries enter the cranium, and perhaps it might have been traced in other situations, if a more minute search had been made.

"'It is, perhaps, worth remarking that in both of those situations, where the arteries were found dilated, these vessels make a sudden turn, and from this cause their coats are exposed to a full stream of blood from the heart. We can readily conceive, therefore, that amaurosis may occasionally depend on the enlargement of this turn of the carotid artery, producing, by its pressure, absorption of the medullary matter of the optic nerves.

"'The twin-sister of this lady died in the eighty-first year of her age, and, for eight or ten years before her death, she also had been completely amaurotic. Though her general health was more entire than is usual at such an advanced age, she had lost not only her sight, but also her senses of taste, of smell, and of hearing. She could not distinguish animal from vegetable food, or one sort of fluid from another.

"'No opportunity was obtained of inspecting the head. The only daughter of Mrs. —— is at present alive, and has been totally blind from amaurosis for several years; she is at present in her fifty-sixth year.'

"I have been consulted by the son and grandson of Mrs. ——, who have both weak eyes. The grandson, in particular, has a very distressing degree of congenital amblyopia.

"Any exertion of his eyes induces temporary blindness; and, though he can sometimes see a minute object, at others he will walk directly against a chair or table.—TRANSLATOR."

Color-blindness is a regular symptom, but not always to be detected in the region of scotoma when the latter is dense. At evening, or in cloudy weather, they see better, and subjective luminous appearances are common.

By the ophthalmoscope some morbid change could almost always be seen—exceptions occurred, although seldom. A little haziness of the margin of the nerve, and hyperæmia of its vessels, could be seen, or even a slight neuro-retinitis might appear. The occurrence of fine, white streaks along the vessels was frequent, or a peculiar spot of exudation might be deposited in the disk, as is represented in one case by a chromo-lithograph. At this stage the arteries are not reduced in size, as is ordinarily the case in neuritis optica, but are either normal or enlarged. After a time a decided white or bluish-white decoloration of the nerve ensues, the vessels become small, and the lamina cribrosa may or may not become conspicuous. The white color of the nerve may be confined to its temporal half, or overspread the whole. As this stage occurs, the degree of vision deteriorates; but, when it is fully established, a change for the better may be noted, while the looks of the optic nerve continue unchanged. This fact has much practical value, and encourages attempts at treatment by a prospect of success despite atrophic appearances. The influence of hereditary tendency is undoubted, but does not always come in the direct line of parentage. In the first family, where three sons were born of one father, and two sons and a daughter born of another father, the hereditary tendency came exclusively from the mother; she was unaffected, but her brothers were victims. So the disease cropped out upon the nephews. Men are much more often affected than women. The time when the disease appeared was between the ages of thirteen and twenty-eight years. In many patients there were other neurotic symptoms, such as headache, *migrain*, dizziness, palpitation of the heart, etc. In one case there was epilepsy.

The treatment which seemed to be most useful was a mild course of mercurial inunction. Even the inception of the atrophic stage need not deter one from the practice. Iodide of potassium does very little good. Local bloodletting was employed in the more hyperæmic cases, but without the manifest good effects so promptly witnessed in ordinary cases of amyblopia. Galvanization of the sympathetic in one case was followed by surprisingly good results; but such was not the experience in other cases. But Dr. Leber recommends further trials of this remedy, in the belief that good may come of it. Tonics were found ineffectual, and injections of strychnia equally valueless.

9.—*Embolism of a Branch of the Central Retinal Artery.* By Dr. A. Barkan, San Francisco.

Embolism of Branches of the Central Retinal Artery. By Dr. H. Knapp. [Archives for Ophth. and Otology, vol. iii., part i., 33–39.]

The cases are clearly described, and present very characteristic appearances. A summary of the symptoms is given by Dr. Knapp:

1. Sudden appearance of the impairment of sight, which at first manifests itself as an obscuration of the whole visual field of the affected eye, but more or less rapidly disappears in one part, leaving a defect in the upper or lower half.

2. When a primary branch of the central retinal artery is obstructed, it results in *superior* or *inferior hemiopia;* but, when a secondary branch only is obstructed, a *sector-like* defect in the upper or lower half of the visual field is observed. At least one border-line of both the hemiopic and sector-like defects coincides with the horizontal meridian.

3. The portion of the optic papilla lying in the opposite direction to

the defect in the visual field becomes white and punctate—partial atrophy of the optic nerve—which is well set off by the unchanged appearance of the remainder of the papilla.

4. The obstructed arteries become thin, seamed with white streaks, and disappear a short distance from the papilla. The veins are not changed.

10.—*Intraocular Enchondroma.* By Dr. J. J. Chisholm, of Baltimore, and Dr. H. Knapp, of New York. [Archives for Ophth. and Otology, vol. iii., part i., 1–16.]

A case in many respects important—a tumor which had been twenty-two years growing, which was of a nature hitherto not known to occur in the eye, viz., a cartilaginous structure, and which, while it was enucleated without particular difficulty, yet became indirectly the cause of death in consequence of secondary hæmorrhage nine days after the operation. To control the hæmorrhage, the common carotid was tied. The only explanatory remark in connection with the death is that irregular tetanic symptoms supervened—no autopsy reported.

The patient was a farmer, twenty-five years old, and in good health. The tumor attained the size of a large egg, being two and a half inches in the short diameter, and three and a half inches in the long diameter. It was sometimes painful, but chiefly inconvenient because of its magnitude. It was naturally supposed to be a cancerous mass, despite its long continuance and its confinement within the tunics of the eye. After its removal the tissues of the orbit were found to be healthy.

The microscopic examination, very carefully made by Dr. Knapp, and illustrated by many drawings, showed that there was an enveloping fibrous capsule; within were numerous hard nodes separated by fibrous septa, and about one-fifth of its bulk consisted of softer substance of a fibro-granular appearance.

In the nodes were found two varieties of cartilage, the hyaline and the fibrous, in very characteristic pictures. The fibro-granular part was composed of fat, granular bodies, connective tissue, and formative cells, with blood-vessels.

Dr. Knapp convinced himself that the enchondroma originated from some part of the inner layers of the sclerotic, and that the cartilage increased not by cell-multiplication of its elements but by the conversion of formative cells into cartilage-cells. He thinks the tumor entirely benign in a clinical sense, and has not found in literature a similar case.

11.—*Report upon Fifty Extractions of Cataract according to Weber's Method.* By Dr. Carl Driver, in Chemnitz. [Graefe's Archiv für Oph., vol. xviii., 11, 200.]

Weber proposed a method of operating for cataract by making a section at the upper margin of the cornea with a hollow lance-knife. The knife is of the exact size to make a wound which will permit easy exit of the lens. Its point is thrust completely to the opposite side of the anterior chamber. An iridectomy is sometimes made and sometimes is not made, according to the difficulty of removing the lens and the dilatability of the pupil. After opening the capsule freely, the expulsion is effected by pressure and counter-pressure, as usual—the counter-pressure being made by a small shovel of Dr. Weber's invention. This brief explanation may not be out of place notwithstanding the announcement of the method was made in an elaborate article so long ago as 1867 in the Archives, because few persons have adopted the proceeding, and scarcely any statistics besides Weber's have been published. The technical difficulty of correctly using the knife is, according to Weber, considerable, while the manipulation of

Graefe's knife is easy, and few have been willing to try to attain the skill for a new operation until the experience of Graefe's method had been completed.

Dr. Driver reports the following facts: "He operated on thirty-nine persons and made fifty extractions. He made iridectomy in twenty-six operations—in the first fourteen cases without exception, and in the subsequent operations using discrimination as to special indications. In so far as a circular pupil may be secured, the operation may justly claim an advantage for acuity of vision. But the special claim put forth is in behalf of rapidity of healing as well as safety. The average stay in the institution we are told was one week, and eight cases were dismissed in from three to five days without the presence of the slightest irritation." The healing process in forty cases was perfectly normal; in three cases iritis occurred.

As the general result: in forty-four eyes, S = $^{20}/_{30}$ to $^{20}/_{100}$; in three was quantitative perception capable of improvement by iridectomy; in three total loss. Total fifty.

The above figures make an excellent showing, and further facts will be gladly welcomed, but, in the present attitude of the subject of cataract extraction, a new method must present very strong arguments before it will secure adoption.

While the form of Weber's cut is greatly in its favor, the operation requires an accurate estimate of the size of the cataract, so as to choose the knife of proper size, and this is not always easy.

12.—*Cataract Extraction*, 200 *Cases*. By David Little, M. D. [British and Foreign Medico-Chirurgical Review, January, 1873.]

The author performed Graefe's operation, and in reckoning his results has:

Total loss	7
Quantitative perception of light	9
Count fingers	1
Read Jaeger 1	146
" Jaeger 2 to 4	25
" Jaeger 6 to 8	5
" Jaeger 10 to 19	7

The author reckons his good results to be one hundred and eighty-three cases, giving 89 per cent. He certainly was fortunate to save more than 70 per cent. able to read Jaeger 1, but this means acuteness of vision, ranging between $^{20}/_{20}$ and $^{20}/_{70}$ or even more. Every oculist knows that many patients whose distant vision is highy amblyopic will do remarkably well in reading small type, and we therefore regret that the test was not taken for distant print.

He gave chloroform in only four cases, which shows that his patients possess more self-control than belongs to Americans. In twenty-seven cases, iritis took place; the average duration of cure is not given. Secondary operations on the capsule were done seventeen times. Loss of vitreous happened twenty-two times, yet he endeavors, he says, "to lay the centre of the section just within the cornea, and thereby diminish the risk of rupturing the hyaline membrane." It is thus evident that our author, like so many others, does an operation called by Graefe's name, but not strictly after his method. A noteworthy and sensible observation is, that he puts in atropine early after the operation—as early as six or eight hours after, which is sooner than the general practice, but, he asserts, not so soon as to be dangerous, but greatly helpful in warding off iritis.

13.—*Report on Sixty-four Cataract Extractions according to the Method of Von Graefe, performed at the Massachusetts Charitable Eye and Ear Infirmary.* Compiled by Dr. H. Derby. [Report of the Infirmary for 1872.]

Of the whole number, the resulting vision was ascertained in only fifty-four; but, of the remaining ten, eight were known to be good results. The summary gives thirty-one with vision $\frac{1}{6}$ and better; and fifteen between $\frac{1}{6}$ and $\frac{1}{10}$. There were seven failures. In seven cases, secondary operations were done. One patient died of pyæmia, upon whom a normal operation was done, and no account is given of the character of the morbid process in the eye.

The successes foot up, 84 per cent. vision above $\frac{1}{10}$; and failures 11 per cent.; being 5 per cent. for cases worse than $\frac{1}{10}$, but not failures.

Miscellany.

The Late Dr. J. C. Nott.—At a stated meeting of the New York Academy of Medicine, held April 17, 1873, the following preamble and resolutions, presented by Drs. W. C. Roberts and S. S. Purple, were adopted and ordered to be entered on the minutes:

Whereas, It it has pleased God, in His own wise providence, to take from among us our late associate, Dr. Josiah C. Nott: therefore—

Resolved, That the demise of this eminent scholar and experienced practitioner, at a comparatively early age, and amid active professional usefulness, is a grievous loss both to the science and the art of medicine, the Academy and the public.

Resolved, That by his literary labors, his teachings, his papers on yellow fever, his extensive and valuable ethnological researches, his surgical and gynæcological skill, and his great mechanical ingenuity, he adorned and advanced the cause and progress of American medicine.

Resolved, That we deplore, in his death, the loss of an amiable and courteous gentleman and much esteemed associate, and will cherish his memory with affectionate regret.

Resolved, That a copy of these resolutions be given to the family of the deceased, and published in the medical journals.

Austin Flint, M. D., *President.*

Wm. T. White, M. D., *Secretary.*

At a stated reunion of the Medical Library and Journal Association of New York, held April 18, 1873, Dr. John C. Peters, President, in the chair, the following preamble and resolutions were read and adopted:

Whereas, This Association having learned of the death of Josiah C. Nott, M. D., a successful and honored physician both in the Northern and Southern sections of our country: therefore—

Resolved, That, in the death of Dr. Nott, we recognize the loss of one of our most devoted members; a gentleman eminent for his high integrity and his unblemished character, distinguished alike as an ethnologist, gynæcologist, and surgeon, and by his untiring zeal for the advancement of medical science.

Resolved, That, as an expression of our sympathy with his afflicted family, a copy of these resolutions be transmitted to them, and published in the medical journals; also entered on the minutes of this Association.

Wm. N. Blakeman, M. D.,
Benj. I. Raphael, M. D., } *Committee.*
Bradford S. Thompson, M. D.,

The Late Dr. James L. Brown.—The following resolutions were presented by a committee of the New York Obstetrical Society, appointed at the meeting subsequent to the death of Dr. James L. Brown, to express the sense of the Society on the sudden loss of its esteemed President:

Whereas, It has pleased Divine Providence to take from our midst our beloved President, Dr. James L. Brown; therefore, be it

Resolved, That we deeply mourn our loss in being thus suddenly deprived of an able and devoted President, whose wise counsels and judicious labors were always of the highest value to this Society.

Resolved, That, by the death of Dr. Brown, we have lost a friend and associate whose warmest interest and hearty coöperation have been with us since the very foundation of our Society, and whose unceasing and zealous exertions have largely contributed to its present position and success.

Resolved, That, in the removal in the midst of an active career of one so qualified to adorn its ranks, the medical profession of this city has sustained a severe loss.

Resolved, That we tender our heart-felt sympathy to the bereaved family of Dr. Brown.

Resolved, That a copy of these resolutions be sent to the family of Dr. Brown, and that they be published in the medical journals of this city.

(Signed) T. G. Thomas,
E. R. Peaslee.

Official:
Charles S. Ward, *Secretary New York Obstetrical Society.*

Journals of Obstetrics.—We have received the first number, for April, of *The Obstetrical Journal of Great Britain and Ireland*, a monthly publication issued by J. & A. Churchill, London, under the editorship of J. H. Aveling, M. D., and Alfred Wiltshire, M. D. The contents of the number before us include original communications from Dr. Robert Barnes and other leading obstetricians, reports of cases in hospital practice, abstracts of proceedings of societies, general correspondence, and an excellent summary of obstetrical and gynæcological news. There is certainly abundant material in Great Britain for a first-class journal of this kind, and we have no doubt the editors will avail themselves of it. The general appearance of the new issue is all that could be desired. We are glad to see that the Messrs. Churchill have also undertaken the republication in England of the *American Journal of Obstetrics*, published in New York by William Wood & Co., and already very favorably known to the profession in this country. Dr. Paul F. Munde will hereafter be associated with Dr. Dawson in the conduct of this journal.

Appointments, Honors, etc.—The fiftieth anniversary of the doctorate of Prof. Ernest Blasius was celebrated at the University of Halle, April 5th. This celebrated surgeon was born in Berlin in 1802. Mr. Milman, M. A. Oxon., son of the late Dean Milman, has been appointed Assistant-Registrar at the University of London, *vice* Dr. Hirst, appointed Principal of the Naval College, Greenwich. There were eighty-four candidates for the appointment. Sir J. J. Trevor Lawrence and his sisters have presented one thousand pounds to St. Bartholomew's Hospital, the interest of which is to be awarded to the best student in medicine and surgery, in memory of their late father, Sir William Lawrence, surgeon to the hospital. Prof. Huxley took his chair as Lord Rector of Aberdeen University, April 16th. Sir Henry Holland is eighty-four years old, being the senior Fellow of the Royal Society.

Obstetrical Museum.—The Philadelphia Obstetrical Society has issued a circular announcing its intention to establish a museum for the collection of deformed and distorted pelves, and for the preservation of obstetrical instruments possessing historical value or illustrating new methods of treatment. Casts or photographs are solicited of such specimens as cannot be sent; and in special cases the Society will offer a pecuniary recompense, if desired. Space has, we believe, been obtained in the museum of the College of Physicians for this collection. Dr. J. V. Ingham, Secretary of the Society, will receive specimens, and will furnish any further information required.—*Philadelphia Medical Times.*

Medical Societies of Hudson County, N. J.—At the recent annual meeting of the County Medical Society, the following officers were elected for the ensuing year: President, Dr. M. A. Miller; Vice-President, Dr. J. D. McGill; Secretary, Dr. Henry Mitchell; Treasurer, Dr. H. H. Abernethy; Reporter, Dr. S. R. Forman.

At the regular meeting of the District Medical Society for the County of Hudson, N. J., held April 1, 1873, the following officers were elected to fill vacancies: President, Dr. D. B. Carpenter; Vice-President, Dr. S. R. Forman; Treasurer, Dr. Everett. Dr. H. M. Eddy was elected Reporter to the State Medical Society.

London Medical Schools.—The entries at the various schools for the present year are as follows:

Guy's Hospital	83
University College	83
St. Bartholomew's	79
St. Thomas's	51
St. George's	47
King's College	35
London	31
Middlesex	22
St. Mary's	21
Charing Cross	20
Westminster	4
Total	476

A Prosperous Society.—The New York Society for the Relief of Widows and Orphans of Medical Men is in a flourishing condition. At the thirtieth annual meeting it appeared that there were funds invested amounting to over eighty thousand dollars, and that aid was at present extended to six widows and three children of deceased members. The following are the names of officers selected for 1873: President, Dr. John G. Stone; Vice-Presidents, Drs. J. R. Vankleek, L. T. Hubbard, and John G. Adams; Treasurer, Dr. J. W. G. Clements; Secretary, Dr. Gouverneur M. Smith.

The Right of Physicians to dispense Medicines in England.—The Royal College of Physicians of Edinburgh have obtained from Sir George Jessel and Mr. J. H. Lloyd an opinion in favor of the right of their licentiates practising in England to dispense medicines for their patients. A reason for obtaining this opinion has been the recent decision of certain county-court judges that only persons licensed under the Apothecaries Act of 1815 could in England recover charges for medicines supplied to their patients.—*Medical Times and Gazette.*

French Prizes.—The Society of Surgery of Paris has awarded the *Prix Duval* to M. Malherbe for his researches on "The Febrile Condition in Diseases of the Urinary Organs." The Society of Medicine and Surgery of Toulouse proposes as a prize subject for 1874 the following question: "On the purity of the chemical medicines most commonly employed: indicate the most certain and easy tests."

Medical Society of Passaic County, N. J.—The District Medical Society of this county held its semi-annual meeting in Paterson, April 7th, and elected the following officers for the ensuing year: President, O. Barnes, M. D.; Vice-President, O. Warner, M. D.; Secretary, William Blundell, M. D.; Treasurer, J. R. Leal, M. D.

The Pulse of Various Animals.—Vatel, in his "Veterinary Pathology," gives for our domestic animals the following pulse: Horse, from 32 to 38 pulsations per minute; ox or cow, 25 to 42; ass, 48 to 54; sheep, 70 to 79; dog, 90 to 100; cat, 110 to 120; rabbit, 120; Guinea-pig, 140; duck, 135; common fowl, 140.

Death from Hydrate of Chloral.—The *Medical Times and Gazette*, of April 5th, notices the recent death of a medical student who had taken a drachm and a half of chloral, as he said, "to quiet himself." He had been in the habit of taking large quantities of the drug to procure sleep.

Graduates in Medicine for 1873.—At the first commencement of the College of Physicians and Surgeons, Baltimore, Md., held February 18th, diplomas were presented to eighteen graduates. The Missouri Medical College, St. Louis, at the recent commencement had twenty-one graduates.

The New Health Department.—Under the new charter the Health Department will consist of two medical and two non-medical commissioners, the President of the Board of Police to be one of the latter. The Bureaux of Registration and Sanitary Inspection are to be continued.

New York Academy of Medicine.—At the stated meeting, June 5th, Prof. J. Lewis Smith will read a paper on "Cerebro-Spinal Meningitis." At the stated meeting, June 19th, Dr. R. J. O'Sullivan will read a paper on "The Hygiene of Primary Schools."

Medical Society of Mercer County, N. J.—This Society has elected for the present year the following officers: President, C. Shepherd, M. D.; Vice-President, John Woolverton, M. D.; Secretary, J. B. James, M. D.; Treasurer, J. L. Bodine, M. D.

Correction.—We are desired to make a correction of date in the article published in the May number of the JOURNAL in a case of tracheotomy, page 508. The tube was removed from the throat December 5th, and not December 25th, as stated.

Jefferson Medical College.—The application to the State Legislature, for an appropriation toward establishing a hospital in connection with this school, we regret to hear has been unsuccessful.

British Medical Association.—The annual meeting of this Association for 1873 will be held in London on the 6th, 7th, and 8th of August. The Society has upward of five thousand members.

Georgia State Medical Association.—Dr. Wills Westmoreland, of Atlanta, has been elected President of this Association for the next year. The meeting in 1874 will be held in Thomasville.

Massachusetts Medical Society.—The annual meeting of this Society will be held June 3d or 4th.

Treatment of Diseases of the Bladder by Urine.—Dr. Clemens, a practitioner of Frankfort, well known from his numerous communications to the medical journals, in No. 7 of the *Deutsche Klinik* has an interesting paper on "The Treatment of Chronic Diseases of the Bladder by the Injection of Tepid Normal Urine." The distress arising from chronic catarrh of the bladder, whether produced by abnormal urine, gravel, stone, etc., and the difficulty of effectually treating it, are, he observes, known to most practitioners. For many years past he has been treating these cases with various forms of injection, or merely by washing the bladder out with lukewarm water, and in many instances he has obtained much alleviation of suffering, and sometimes a curative result. About four years since, in a very bad case of disease of the bladder, in which this organ had been for months only in contact with decomposed and stinking urine, the idea occurred to him that advantage might accrue from introducing into it urine with its normal proportion of uric acid. The experiment succeeded so well in this and some other cases that he became convinced that the urine in question formed a better material than the most esteemed injections. The bladder having been completely emptied by the catheter, from six to eight ounces of lukewarm distilled water are thrown in, and retained for about five minutes. After this has been removed, some tepid water is again slowly injected through a large injecting-syringe, and after some minutes is removed. A young and healthy individual now passes urine into the syringe, which has been previously raised in warm water to a temperature of 25° R., and this is then immediately injected into the bladder, and left in for a longer or shorter time. The impression made by this normal, blood-warm urine of a young and strong man—the temperature of which is generally higher than that which has issued from the diseased bladder—is sometimes in the highest degree favorable: so that in one case a single injection sufficed to relieve a severe spasm of the bladder. The injection may be employed twice, and in bad cases thrice, daily, and a most beneficial influence is exerted on the walls of the organ. The urine of healthy boys from ten to fourteen years of age may be employed alternately with that of adults, with excellent effect.—*Medical Times and Gazette.*

New Method of Plugging the Posterior Nares.—Dr. A. Godrich, M. R. C. S., describes in the *British Medical Journal* a new means of dealing with cases of epistaxis:

The instrument consists of a small elastic bag stretched on the end of a hollow style, by means of which it is pushed through the nasal fossa into the pharynx. It is then dilated with ice-cold water by means of the ordinary ear-syringe, the nozzle of which is inserted into a piece of India-rubber tubing tied to the other end of the style. A small piece of thread or twine tied round this prevents the water from escaping. The bag, thus dilated, is now to be drawn well forward into the posterior nares, into which, by its elasticity, it will accurately fit. The anterior India-rubber plug is next to be slid along the style (this is more easily done if the style be previously wetted) into the anterior nares, which it fits like a cork. The cohesion between this plug and the style will, I think, be sufficient to hold both plugs in position; if not, a piece of string tied round the style in front of the anterior plug will insure perfect security.

When it is necessary to remove the plug, all that the surgeon has to do is to cut the string tied round the piece of India-rubber tubing, when the water will be expelled by the elasticity of the bag, and the instrument may be removed without difficulty.

The instrument, even at its thickest end, where the elastic bag is stretched over the style, is not larger than a No. 6 catheter; and it can consequently be passed through the nasal fossa without the least difficulty, and with very little discomfort to the patient, as I have proved by frequently passing it through my own nose. The style being made of elastic material—in fact, a gum-elastic catheter, and therefore capable of being bent to any curve required—also facilitates the introduction of the instrument. When once the instrument is in position, and quiet, it is almost impossible to tell by the sensations alone that there is any foreign body in the nasal fossa at all; the dilatation of the bag causing but little discomfort, being above the sensitive palate and fauces.

Leprosy in the Sandwich Islands.—The Honolulu *Gazette* says: "Dr. Trousseau and Hon. S. G. Wilder, of the Board of Health, visited the Leper Hospital at Kalaupapa, on Molokai, on Wednesday and Thursday of last week. They found the settlement numbered over six hundred persons, of whom about one hundred and twenty were the natives who lived in the village prior to its selection as a hospital site, who, as owners of the land, prefer to remain on it. There are over four hundred lepers, and about one hundred relatives, who have gone there self-banished rather than be separated from their kin. The patients, gathered there from every island of the group, were as contented as could be expected. No complaint was made by any one, and, in answer to inquiries, all said they had an abundance of food and every thing they wanted. Few realize the magnitude of this work. The plague is extending, and, with all the vigilance of the authorities to check it by isolating every new case, it is rapidly spreading, chiefly among the young, who inherit it from their parents. The very worst cases are boys and girls; and to establish and carry out the rule, that every child tainted with the disease must be torn from its parents and banished for life among strangers and lepers, seems cruel. Yet this is now being done every month with natives."

Medical Society of the State of New York.—Since the organization of this Society in 1806, 145 medical men have been elected honorary members; of these 119 were non-residents of the State; 71 only are now living. Four hundred and sixteen permanent members have been elected from the years 1813 to 1871, inclusive; of these, 306 are now living. The Regents of the University have conferred the honorary degree of Doctor of Medicine upon 115 gentlemen on the recommendation of the State Medical Society; of these, 49 have died. Eligible for election as permanent members, 134. Eligible for election as honorary members, 14. Of the 48 ex-presidents, 30 have died. Fifty-four county societies are represented in the parent society, representing 2,432 members. The average attendance at the annual meetings, held in Albany in February of each year, is about 350.—*Medical Record.*

Coffee and Sulphate of Quinia.—M. Briquet considers the common practice of administering quinia in coffee open to much objection. He alleges that the tannin in the coffee coalesces with the quinia, forming a tasteless, and insoluble, and almost inert salt—the tannate of quinia—from which the stomach has as much difficulty in extracting quinia as from powdered bark. It is, he thinks, one of the worst preparations of quinia.—*Philadelphia Medical Times.*

Progress of Scientific Discussion in France.—This is at present very active. The French Scientific Congress has just held a successful meeting (the thirty-ninth) at Pau, and the annual meeting of the delegates of provincial learned societies was held last week at the Sorbonne. This consisted of three Sections—History, Archæology, and Science. In the last, several papers were read of interest in medical science. Lyons is already preparing for receiving the new French Association for the Advancement of Science, toward the expense of which the municipality has liberally contributed.—*Medical Times and Gazette.*

Obituary.

M. PIERRE CH. HUGUIER, of Paris, died on the 12th of January, aged sixty-eight years.

DR. EDWARD LATHAM ORMEROD, F. R. S., of Brighton, England, a physician of unusual scientific accomplishment and practical skill, and of high moral worth as a man, died March, 17th, aged fifty-four years. His most important professional studies were on the diseases of the heart.

RICHARD PARTRIDGE, F. R. S., a well-known surgeon and anatomist of London, Professor of Anatomy for twenty years to the Royal Academy of Arts, and for thirty-six years to King's College Hospital, died March 25th, aged sixty-eight years. He was one of the surgeons summoned to attend Garibaldi after the battle of Aspromonte, but failed to find the ball which Nélaton afterward detected with his porcelain-tipped probe. His death renders vacant the professorship of Anatomy in King's College.

DR. R. CRESSON STILES, who died in West Chester, Pennsylvania, on April 17th, in the forty-third year of his age, was a graduate of the Medical Department of the University of Pennsylvania, and had studied much abroad. He was, for several years, Professor of Physiology in the Berkshire Medical College, Pittsfield, Massachusetts. During the war he served as Surgeon of Volunteers.

Dr. Bence Jones, of London, the well-known authority on medical chemistry, died in London, April 20th. Dr. Jones was born December 13, 1813. In 1846 he was elected Physician to St. George's Hospital. In 1860 he was elected Honorary Secretary to the Royal Institution of Great Britain, which position he held at the time of his death. He was the author of "Animal Chemistry," "Lectures on Pathology and Therapeutics," the "Croonian Lectures on Matter and Force," "Life and Letters of Faraday," and many scientific and medical papers. During the whole of his professional career he devoted much time to original scientific investigation, on the result of which his fame will chiefly rest.

Brevet Brigadier-General Madison Mills, Surgeon in the United States Army, died at his quarters at Governor's Island, New York, April 28th. Surgeon Mills was a very meritorious officer. He entered the service, according to the date of his first commission, on the 16th of February, in the year 1847. He was promoted to the rank of lieutenant-colonel by brevet on the 29th of November, 1864, and advanced at intervals since to colonel by brevet, and brigadier-general by brevet. His remains were interred from the chapel, Governor's Island.

Dr. Benoit Morel, the distinguished alienist physician, has just died, in the sixty-fourth year of his age. Born at Vienna, of French parents, he received the Paris diploma in 1839, and some time afterward was appointed to the Maréville Asylum, near Nancy. Thence he was transferred in 1856 to Saint-Yon, Rouen, which he succeeded in forming into a model establishment, whence improvements of all kinds were diffused over the French asylums. No French alienist was better known in foreign countries, which he visited in order to observe and imitate improvements. His first work of note was his "Études Cliniques sur les Maladies Mentales," which has been followed by a great number of memoirs and papers; and of a great work upon which he was engaged at the time of his death—"Médecine Légale des Aliénés"—only one volume had appeared.

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Vol. XVII.—No. 6.] [Whole No. 99.

NEW YORK
MEDICAL JOURNAL.

JUNE, 1873.

EDITORS:

WILLIAM T. LUSK, M. D., JAMES B. HUNTER, M. D.

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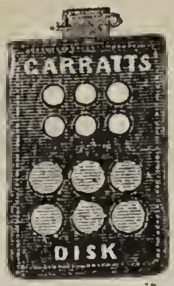

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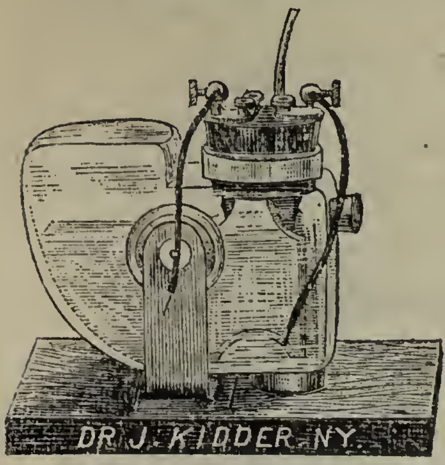
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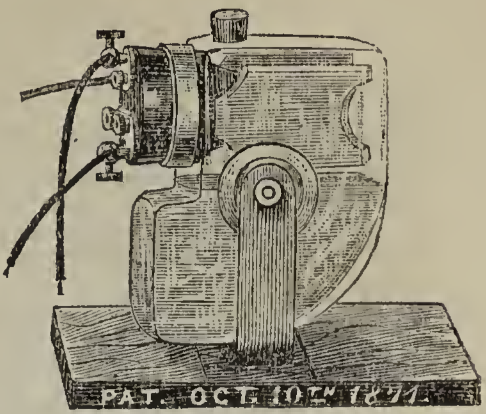
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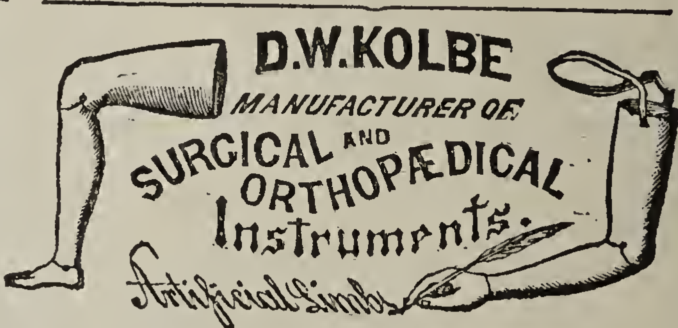

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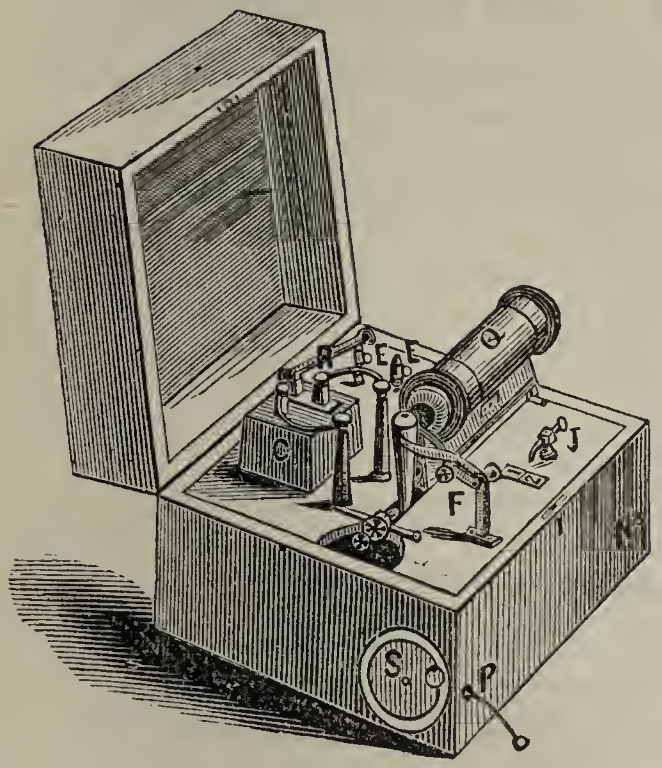

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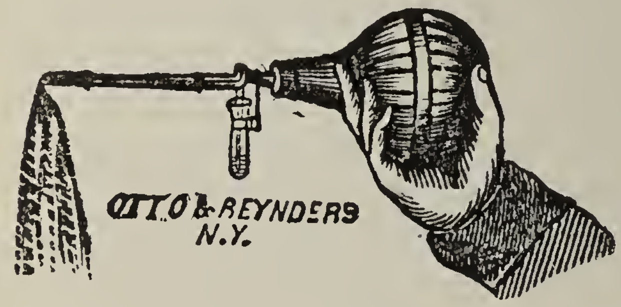

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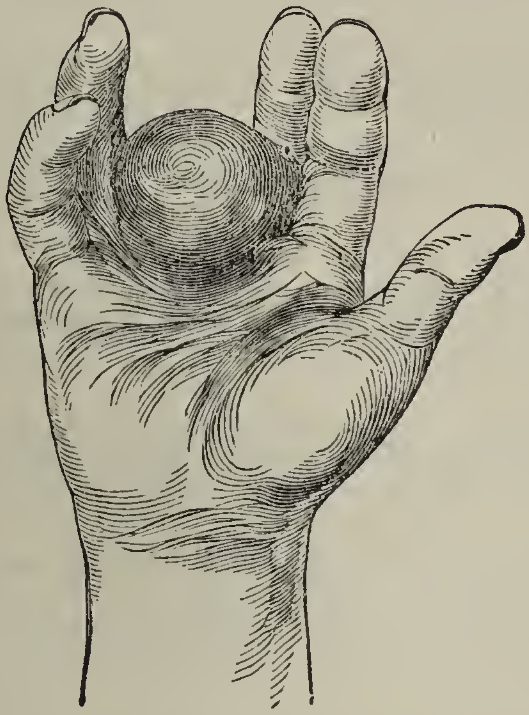

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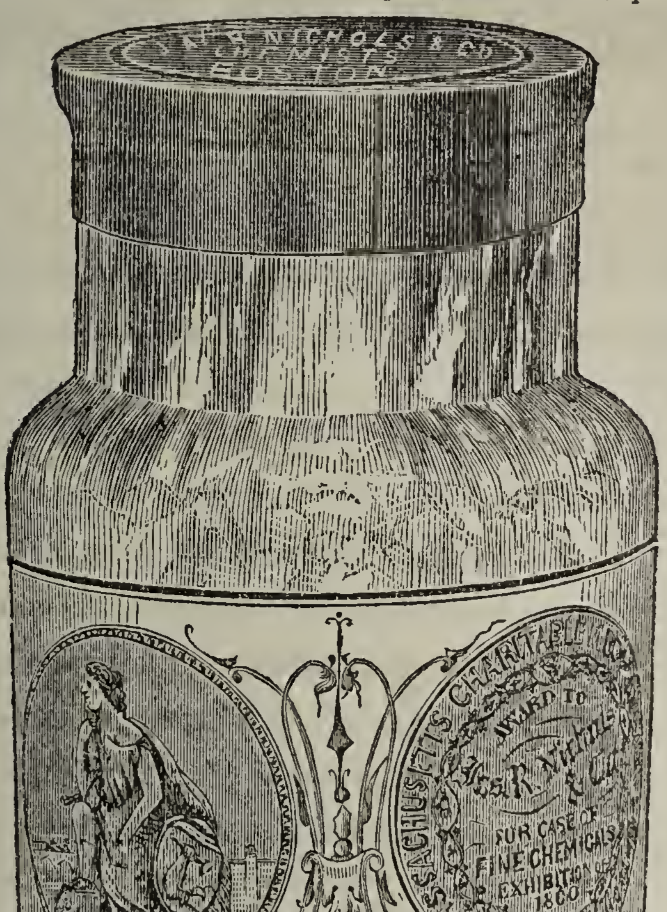
JAMES R. NICHOLS & CO. CHEMISTS BOSTON
MASSACHUSETTS CHARITABLE MECHANICS ASSOCIATION
AWARD TO JAS. R. NICHOLS & CO.
FOR CASE OF FINE CHEMICALS
EXHIBITION 1860
CINCHO-QUININE
One Ounce.
Used in place of the Sulphate of Quinine
Dose the same
JAMES R. NICHOLS & CO.
Manufacturing Chemists
BOSTON.

Dr. J. A. Perkins, of Chestertown, Md., under date of Feb. 10, 1872, writes us as follows: "I have used your preparation of Cincho-Quinine during the past summer in a malarious district. I find it entirely reliable as a substitute for the sulphate of quinine. It produces less unpleasant effects on the head, and is much better borne by the stomach. In the cases of children, I have found it to be a very desirable remedy, on account of the much less unpleasant taste. I use it satisfactorily in all cases as a substitute for the sulphate."

I have used one-and-a-half ounces of the Cincho-Quinine, and I think very favorably of its effects. In a case of intermittent fever (the patient from Tennessee), I found it to operate as well and as promptly as sulphate of quinine, without any unpleasant head symptoms. In no case have I discovered any unpleasant cerebral disturbance, as is often found in the use of the quinine. — J. M. Aldrich, M. D. *Fall River, Mass.*

I have used several ounces of Cincho-Quinine with the most complete success. I prefer it to the sulphate of quinine in intermittents, especially with children. I can strongly recommend it to the profession generally.—J. H. Frey, M. D., *Perry, Iowa.*

The Cincho-Quinine which I have used gave entire satisfaction. It has all the advantages you claim for it, and doubtless it will in time supersede the use of sulphate of quinine entirely. — Samuel W. Coons, M. D., *Madison, Ala.*

I have used Cincho-Quinine in eight or ten cases, and have reason to think well of the results. I give it as I do the sulphate, 10 grains in five doses during the intermission, and five grains one or two hours before a paroxysm is due, and continue to give five grains once a week for three weeks. I shall continue to use it, and wish you to send me one ounce by mail. —J. C. Downing, M. D. *Wapping Falls, New York.*

After further continued trial of the Cincho-Quinine, I can safely say that it is a most excellent remedy. The absence of cinchonism in its use, its comparatively pleasant taste, its cheapness, with its fully equal tonic and anti-periodic qualities, make it an article which must soon be indispensable in the list of remedies of every intelligent physician.—S. A. Butterfield, M. D., *Indianapolis, Ind.*

I have been using the Cincho-Quinine in my practice in intermittents and remittents, and I think well of it. I believe it to be quite equal to the sulphate, with all the advantages which you claim for it.—J. C. Ross, M. D., *Lincoln, Ill.*

I have used an ounce of Cincho-Quinine in some obstinate cases of intermittent neuralgia and ague, and am happy to state that it has thus far sustained in full the anticipation raised by what you have claimed for it. Dr. S. S. Cutter, of this city, has an extensive general practice, and he informed me a few days ago that the Cincho-Quinine was giving satisfaction.—J. H. Beech, *Coldwater, Mich.*

We can now supply SUGAR-COATED CINCHO-QUININE PILLS of three sizes, namely, 1 grain, 2 grains, and 3 grains, in such quantities as are wanted. They are placed in vials holding 100 each. The price is about one-half that of Quinine Pills. Dose the same.

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TO PHYSICIANS AND DRUGGISTS.

A prominent New York physician lately complained to Dundas Dick about his Sandalwood Oil Capsules, stating that sometimes they almost cured miraculously, but that he had had a patient who had taken them for some time without the least effect. On being informed that several imitations were made and sold, he promised to inquire, which he did, and found that his patient had been taking capsules sold in bottles, and the druggist stated that he could not get **D. D. & Co.'s** at the time, and had often sold the others instead, supposing that, as they were said to contain the same amount of Oil of Sandalwood and Oil of Cassia as the genuine, they would have the same effect.

What has happened to the physician referred to may have happened to many others, and **D. D. & Co.** take this method of protecting *physicians*, *druggists*, and themselves, and also of preventing the Oil of Sandalwood from coming into disrepute.

Oil of Sandalwood is fast superseding every other remedy, sixty Capsules *only* being required to insure a safe and certain cure in six or eight days. From no other medicine can a like satisfactory result be obtained. Our own Copaiba require on an average about twenty days; our Copaiba and Cubebs about seventeen; and our Matico about fifteen; while the best of the *hard* Capsules require about forty days.

Many Substitutes have been advertised for the capsules, such as *Pastes*, *Mixtures*, *Pills*, etc., all of which have been abandoned as unsatisfactory.

D. D. & Co. use more Sandalwood than all the Wholesale and Retail Druggists and Perfumers in the United States combined, and have the complete command of the Oil in the American Market, and this is the sole reason why the pure Oil is sold CHEAPER in the form of their Capsules than in any other form.

Physicians will please notify **D. D. & Co.**, if, under favorable circumstances, their Capsules do not always have the desired effect.

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COD-LIVER OIL.

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It is not sufficiently considered That the Quality of Cod-Liver Oil depends upon the condition of the Fish. The Lofoten Waters, in Norway, is the only known district to which the Cod migrate for spawning, and in excellent condition. Hence the well-known superiority of Lofoten Oil. Many reject the light brown, on account of its unpleasant taste, arising from its being prepared from putrid livers. PETER MÖLLER, therefore, by a Special Process, prepares at Lofoten a Pale Oil, distinctly different from the Pale NEWFOUNDLAND, retaining all the curative virtues with a remarkably pure smell and taste.

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THE MEDICAL SOCIETY of Norway has, through its leading members, testified that MÖLLER'S Oil is preferred for its beneficial properties.

THE MEDICAL SOCIETY of Northumberland and Durham pronounced MÖLLER'S Oil the best.

PHYSICIANS TO LONDON HOSPITALS, and other eminent men in the Profession, have certified to its superiority.

Dr. L. A. SAYRE, Prof. of Orthopedic Surgery in BELLEVUE HOSPITAL MEDICAL COLLEGE, N. Y., having tested all the other Cod-Liver Oils that come to this market, and having found them unsatisfactory, testifies that he is convinced that PETER MÖLLER'S Process is the only one by which Cod-Liver Oil should be made.

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SOLE AGENTS

FOR

THE UNITED STATES AND CANADA.

BELLEVUE HOSPITAL MEDICAL COLLEGE,

CITY OF NEW YORK.

SESSIONS OF 1872-'73.

THE COLLEGIATE YEAR in this Institution embraces a Preliminary Autumnal Term, the Regular Winter Session, and a Summer Session.

THE PRELIMINARY AUTUMNAL Term for 1872-'73 will commence on Wednesday, September 18, 1872, and continue until the opening of the Regular Session. During this term, instruction, consisting of didactic lectures on special subjects, and daily clinical lectures, will be given, as heretofore, by the members of the Faculty. Students designing to attend the Regular Session are strongly recommended to attend the Preliminary Term, but attendance during the latter is not required. *During the Preliminary Term, Clinical and Didactic Lectures will be given in precisely the same number and order as in the Regular Session.*

THE REGULAR SESSION will commence on Wednesday, October 16, 1872, and end about the 1st of March, 1873.

FACULTY.

ISAAC E. TAYLOR, M. D., Emeritus Professor of Obstetrics and Diseases of Women and Children, and President of the College.

JAMES R. WOOD, M. D., LL. D., Emeritus Professor of Surgery.

FORDYCE BARKER, M. D., Professor of Clinical Midwifery and Diseases of Women.

AUSTIN FLINT, M. D., Professor of the Principles and Practice of Medicine and Clinical Medicine.

FRANK H. HAMILTON, M. D., LL. D., Professor of Practice of Surgery, with Operations and Clinical Surgery.

LEWIS A. SAYRE, M. D., Professor of Orthopedic Surgery and Clinical Surgery.

ALEXANDER B. MOTT, M. D., Professor of Clinical and Operative Surgery.

W. H. VAN BUREN, M. D., Professor of Principles of Surgery, with Diseases of the Genito-Urinary System, and Clinical Surgery.

WILLIAM T. LUSK, M. D., Professor of Obstetrics, Diseases of Women, Diseases of Infancy, and Clinical Midwifery.

WILLIAM A. HAMMOND, M. D., Professor of Materia Medica and Therapeutics, Diseases of the Mind and Nervous System, and Clinical Medicine.

AUSTIN FLINT, Jr., M. D., Professor of Physiology and Physiological Anatomy, and Secretary of the Faculty.

ALPHEUS B. CROSBY, M. D., Professor of General, Descriptive, and Surgical Anatomy.

R. OGDEN DOREMUS, M. D., Professor of Chemistry and Toxicology.

Professors of Special Departments, etc.

HENRY D. NOYES, M. D., Surgeon to the Charity Hospital, etc., Professor of Ophthalmology.

EDWARD L. KEYES, M. D., Surgeon to the Charity Hospital, etc., Professor of Dermatology, and Assistant to the Chair of Principles of Surgery, etc.

EDWARD G. JANEWAY, M. D., Physician to the Bellevue Hospital, etc., Professor of Pathological and Practical Anatomy, (Demonstrator.)

A distinctive feature of the method of instruction in this College is the union of clinical and didactic teaching. All the lectures are given within the hospital grounds. During the Regular Winter Session, in addition to four didactic lectures on every week-day except Saturday, two or three hours are daily allotted to clinical instruction. The union of clinical and didactic teaching will also be carried out in the Summer Session, nearly all of the teachers in this Faculty being physicians and surgeons to the Bellevue Hospital and the great Charity Hospital on Blackwell's Island.

The Summer Session will continue from March 17th to July 1st. During this Session there will be daily recitations in all the departments, held by a corps of examiners appointed by the regular Faculty. Regular clinics will also be held daily.

Fees for the Regular Session.

Fees for Tickets to all the Lectures during the Preliminary and Regular Term, including Clinical Lectures	$140 00
Matriculation Fee	5 00
Demonstrator's Ticket (including material for dissection)	10 00
Graduation Fee	30 00

Fees for the Summer Session.

Matriculation (Ticket good for the following Winter)	$ 5 00
Recitations and Clinics	50 00
Dissecting (Ticket good for the following Winter)	10 00

For the Annual Circular and Catalogue, giving regulations for graduation and other information, address the Secretary of the College, Austin Flint, Jr., Bellevue Hospital Medical College.

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